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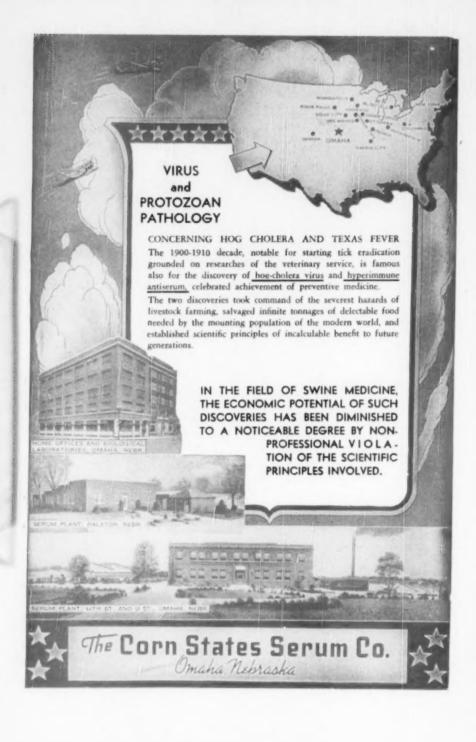
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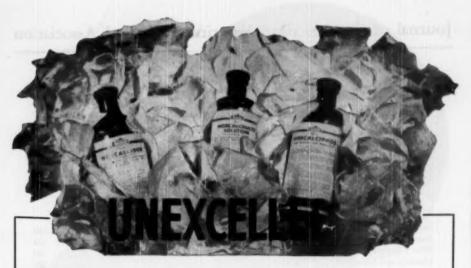
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AVMA & Report

-Veterinary Medical Activities-

- ♦ The AVMA directory for 1950 the most complete directory of American veterinarians ever published will be ready for distribution, to those ordering the book, on March 15. See announcement on ad page 16.
- ◆ The Section on Small Animals is planning an exhibit of roentgenograms at the annual meeting at Miami Beach, August 21-24. Departing from the previous procedure of showing the negatives with a back-lighted viewer, section officers are hoping to have positive prints made which can be shown as glossy prints and lighted from the usual sources of light above and in front of the picture. Any practitioner who has outstanding examples of this method of diagnosis is urged to have a positive print made and to forward this to the section chairman, Dr. C. E. Bild, Box 515, Little River Station, Miami 38, Fla. In order that the exhibit may be made up in an attractive and uniform style, it is urged that all prints be either in the size of 10 by 14 inches or 5 by 7 inches.
- The Committee on Program is endeavoring to increase the number and quality of scientific or educational exhibits to be shown at the convention in Miami Beach. Assistance in this project is solicited from the veterinary science departments at state colleges and universities, especially in the southeastern region, and also from the veterinary colleges throughout the country where research work is being done, which can be developed into good exhibits.
- The Section on Public Health is preparing an outstanding panel on rabies eradication for the Miami Beach meeting. This discussion should tend to crystallize the thinking of veterinarians who practice in areas where rabies is a problem.
- ◆ Efforts to have veterinary medicine included in the so-called emergency health training legislation now before Congress (see editorial, pp. 149-150, February Journal) have been made in recent weeks. Former Congressman (Dr.) George W. Gillie, of Fort Wayne, Ind., and a member of the AVMA Committee on Legislation, has been particularly helpful, and most of the veterinary deans have presented the case to their senators and congressmen. The result of these efforts is not known at time of going to press.

- ♦ President-Elect W. M. Coffee attended the meeting of the Illinois Veterinary Medical Association at Peoria, February 1 to 3. He discussed the activities and programs of the AVMA and, also, outlined the manner in which his clinic is conducted at La Center, Ky.
- "Forewords to Successful Practice" is being distributed to all graduating members of AVMA student chapters and student clubs in the new colleges. This booklet was written to help graduating students adjust themselves to practice in their several communities.
- ♦ Donald G. Anderson, M. D., secretary of the Council on Medical Education and Hospitals, American Medical Association, and Shailer Peterson, D. D. S., secretary of the Council on Dental Education, American Dental Association, met recently with Drs. J. G. Hardenbergh and R. C. Klussendorf of the AVMA to discuss accreditation of professional schools; also the problem of eligibility of graduates of foreign colleges in qualifying for licensure examinations in their respective fields of medicine, dentistry, and veterinary medicine, in this country.
- ◆ The panel exhibit on activities of veterinarians (see August, 1949, Journal, p. 128) is available to all constituent associations. Any such association wishing to prepare an exhibit for presentation at a fair, exposition, 4-H, or FFA gathering may apply for this exhibit. Requests should be sent to the central office as soon as definite dates have been set, in order to avoid conflict with previous requests; they will be filled on a first-come, first-served basis.



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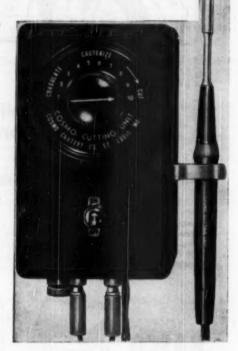
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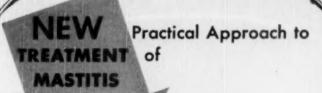
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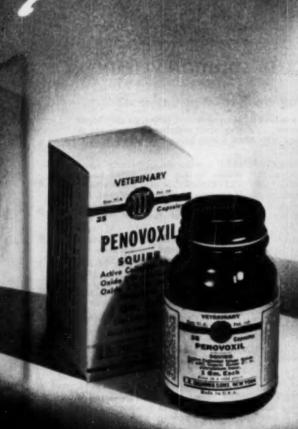
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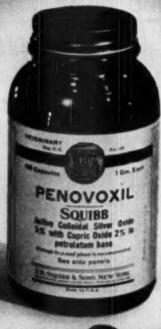
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VOL. CXVI

MARCH, 1950

NO. 876

The Animal Disease Situation in the United States

B. T. SIMMS, D.V.M.

Washington, D.C.

WITH THE population increasing at the rate of nearly 2 million annually, production of meat, milk, and eggs must likewise be increased if our people are to be well fed. As veterinarians, we know that this increase cannot be realized unless the livestock population is reasonably free from disease. It is timely, then, that we review the picture of the health of our domestic animals. In this discussion, attention will be paid mainly to infectious or contagious maladies.

First, let us consider those diseases which do not exist in this country. We have been fortunate in having our flocks and herds remain free of rinderpest, surra, foot-and-mouth disease, fowlpest, contagious pleuropneumonia, and many other destructive maladies. The recent invasion of Mexico by foot-and-mouth disease caused a great deal of alarm among some of our veterinarians and livestock producers. It is a peculiar fact that the occurrence of this and many other highly destructive diseases on other continents and in other countries is accepted as being of little consequence. But man's ingenuity is constantly increasing the danger of invasion of our country by these enemies from the other continents. The airplane measures in hours the distance which separates our flocks and herds from hotbeds of these infections and makes every airport in our country a potential point of entry for them. Furthermore, the low temperatures which are so widely employed in preventing spoilage of products of animal origin preserve viruses and bacteria just as effectively as they do meat,

milk, and eggs. Experience since the turn of the century has taught us that it takes more than exclusion of infected animals to keep exotic diseases out. In fact, none of the six outbreaks of foot-and-mouth disease of the last fifty years was traced to the introduction of a diseased animal.

Since there is always some danger that any one of these diseases may invade our country, in spite of our best efforts at inspection and quarantine, it is the duty of every veterinarian to be constantly alert and to report promptly to state or federal officials the appearance of any unusual or undiagnosed infection.

What about the diseases which are already established in this country? There have been no widespread epizoötics during the past year. But many diseases have very nearly, or even fully, held their own and a few have invaded new territory. Let us discuss some of our more important diseases starting with those affecting cattle.

BOVINE DISEASES

Hyperkeratosis, that baffling new malady, seems to be spreading. Both practicing veterinarians and state officials say, with some assurance, that it is appearing in counties and states which have heretofore been free of it. Since the cause of this disease is unknown, our profession can not give adequate advice on control and prevention. Plans are under way to start a coördinated research program on hyperkeratosis.

Tuberculosis, after retreating for nearly thirty years, is stubbornly contesting every foot of ground. Unfortunately, a large percentage of our cattle owners, and even some of our veterinarians, think the fight against this disease is

Chief, Bureau of Animal Industry, U. S. Department of Agriculture, Washington, D.C. Presented before the General Session, Eighty-

Presented before the General Session, Eightysixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

all but over. This complacent attitude is dangerous. We must increase the vigor of our attack against this disease if it is to be reduced to the minimum.

Brucellosis continues to be the most serious of the infectious diseases of our cattle. There is increasing evidence that cattle can carry and shed Brucella suis and Brucella melitensis as well as Brucella abortus, a fact which may be of utmost importance because of the tendency of those species to attack human beings. If a strain of either of them becomes bovine-adapted, so that it is easily transmitted from cow to cow and at the same time retains its invasiveness for man, we may see undulant fever become a serious human disease.

All available evidence indicates that the cattle-owning public is increasingly eager to get rid of brucellosis. At a meeting requested by the livestock industry, held in Washington in March, 1949, plans were developed to set up an independent national brucellosis committee. It is of some significance that this group went on record as favoring eradication of this disease. Records indicate that the state and federal cooperative effort to control and eradicate brucellosis is gaining ground very slowly. During the ten months end-ing April 30, 1949, there were slightly less than 4 per cent reactors among the approximately 5 million cattle tested. This is the lowest percentage found any year since World War II. Increased production of strain 19 vaccine in licensed establishments is evidence that the number of heifers being vaccinated is increasing each year. But the program is still moving too slowly. Cattle owners and public health authorities are requesting and even demanding that both the volume and the tempo of the work be increased.

An analysis of the available data and information brings out some interesting Five states in our country anomalies. have nearly one-third of our veterinary population. We might expect that in these states the program for control and eradication of brucellosis would be the most active and successful. But in four of these, there isn't a single accredited county and in the fifth there are only seven. Thus, these states have an average of one and two-fifths accredited counties each. In the other 43 states, there are 463 accredited counties or an average of more than ten to the state. From these data, the conclusion might be drawn that density of veterinary population is not correlated with a successful brucellosiseradication program. Another anomaly we

have observed is that strain 19 vaccine is frequently much less successful when used . by an ardent believer in the efficacy of vaccination than it is when used by a veterinarian who is doubtful of it. The reason for this is easily found. The enthusiast ignores the well-established fact that strain 19, properly used, increases resist-ance very markedly but does not usually confer complete immunity. He vaccinates heifers and either states or implies they are immune. Consequently, the owner is led to believe no sanitary precautions are necessary and exposure to gross infection is not dangerous. Of course, many such owners get in trouble sooner or later. When they do, they condemn strain 19. On the other hand, the doubting Thomas vaccinates, but warns the owners that the heifers should not be exposed to bruceilosis as they have not been fully immunized. If his instructions are followed, results are usually excellent.

Nor is the ardent advocate of the test and slaughter method of eradication invulnerable. In many instances, he fails to take into account the fact that the barns, sheds, barnyards, and pastures on a Brucella-infected farm are apt to be sources of trouble. Unless these can be either thoroughly cleaned and disinfected or allowed to stand idle, the enthusiast may find his client running out of cattle by the time he gets rid of brucellosis.

Dr. John R. Mohler, in reporting results obtained by vaccination, spoke of strain 19 as being another fist with which to fight. I have always liked this expression. We have the two fists, test and slaughter and vaccine, but they will not win battles and championships unless they are directed by an alert and ever-active brain. The brucellosis-wise veterinarian analyzes the situation and takes all the facts into consideration before he decides just how he will fight this disease in any given herd or area. Such men have won and are continuing to win their battles.

In the deep south during the past year, we have seen the peculiar phenomenon of the appearance of fever ticks in a rather widespread area without any accompanying tick fever. With practically the entire cattle population of the area fully susceptible to the disease, the time is ripe for a catastrophic outbreak similar in severity to those which occurred in the last century when the trailing Texas cattle carried ticks to the native cattle of the Plains States. Every effort is being made to eradicate ticks from this area before they find a holdover infected cow.

DISEASES OF SWINE

Our swine industry continues to carry the enormous burden of losing about one-third of the annual pig crop. There is under way, a coördinated research project on diseases of pigs which should, in time, give us additional information on this subject. But in the meantime, we can surely give advice on nutrition and sanitation which, if followed, will result in saving a considerable percentage of the pigs that are now lost.

Hog cholera has not recently appeared in epizoötic form over large areas, but it continues to be a master destroyer of swine, ready to sweep the country if we become complacent and negligent.

Forward looking swine producers are requesting and demanding that a program of control of brucellosis in their animals be developed and applied on a large scale. We do not interpret this as an indication that the disease is becoming more wide-spread but rather as proof that they are aware of the seriousness of the effects of swine brucellosis on economical production and human health.

DISEASES OF POULTRY

Our poultry industry has, in most sections of the country, accepted Newcastle disease, or pneumoencephalitis, as one of the economic burdens which it must carry. Explosive and highly destructive outbreaks are being reported often enough to show it has great potentialities for disaster. But the less spectacular, widely occurring, relatively mild outbreaks which cause little alarm are probably actually causing far greater losses. It is stimulating and encouraging to see that the livestock sanitary officials and poultrymen in some sections of the country refuse to accept this disease as a permanent burden. Perhaps we may look forward to the time when a successful program of prevention and eradication may be instituted.

Pullorum disease continues to lose ground among our poultry flocks. But it is still widespread and potentially a very destructive disease.

Avian leucosis is not in the headlines as frequently as it was some few years ago, but there is very little reason to believe it is less prevalent in our poultry flocks. Perhaps the combined research of virologists and geneticists will result in development of practical methods of control.

We mention that protean disease of mammals, rabies, only to call attention to its prevalence and to the advisability and necessity of an active program of control.

SUMMARY

In closing, may I summarize by saying that our country remains a reasonably safe one in which to grow livestock, probably at least as safe as any in the world, but that we are still far from the ideal; and that the duty and responsibility of keeping our flocks and herds healthy so that our people may be well fed will continue to tax the ingenuity and ability of veterinarians everywhere.

Veterinary Medicine in Public Health Programs

Veterinary medicine has much to offer in a modern public health program. . . . In the course of his routine practice, the veterinarian does more good public health work than many allied professions accomplish with specific effort. . . . Veterinary medicine and public health have been close allies for years, although they never have been organized to work closely together. . . . As health officers and health agencies come to understand the potentialities of the veterinary profession, and to understand that such services will be of material value to their disease control programs, the services of more veterinarians will be solicited.—Colorado Health News, Sept., 1949.

Valiant Years

According to the Associated Serum Producers, the motion picture "Valiant Years" has been selected by the Kiwanis Clubs of America as one of the recommended films in the Kiwanis motion picture project for 1950. The picture, made by Associated Serum Producers, portrays the story of the veterinary profession and some of its accomplishments, and is being shown to audiences throughout the nation. Veterinarians who are members of Kiwanis Clubs might wish to suggest to their local secretaries that "Valiant Years" be requisitioned for showing on one of their programs.

Horse owners and exhibitors expect the veterinarian to know something about type, breed, gait, how to treat false lameness, and tail setting.—F. B. Jones, D.V.M., Kansas.

Our profession is threatened not so much from without as from within, just as no great nation has ever been overcome until it has destroyed itself. If we can discipline ourselves, we shall continue our progress in veterinary service.—C. W. Bower, D.V.M., Kansas

Colorado's Meat Inspection Program

MARTIN D. BAUM, D.V.M., M.P.H.

Denver, Colorado

AS A RULE, the reporting of state and municipal meat inspection activities becomes very much of a stereotyped procedure, as the routine functional operations are relatively the same in all political subdivisions. It is believed, however, that the program in operation in Colorado is different in many respects and embraces several administrative features which should be brought to the attention of interested veterinarians.

The state legislature, in 1947, gave to the State Department of Public Health authority for the conduct of meat inspection activities. Prior to that time, it was a function of the Board of Stock Inspection Commissioners, administered by the state veterinarian.

Before embarking on the task of establishing a service under the new law, it appeared advisable to survey the extent of the problem and determine personnel availability, as well as the physical establishments in existence.

It should be emphasized that the legislature delegated authority for the health department to administer this service, but made the all too frequent mistake of not appropriating necessary funds or providing for personnel employment for its conduct. No standards for operation were stipulated, so it might justly be stated that, in reality, the authority and responsibility was all that was given to the health department.

It was evident from the onset, that the state could not conduct this program or fulfill its obligation with but one veterinarian on its staff; so it was decided that the state's authority must be passed down to the local level health departments for enforcement, and this was the base line from which the entire meat inspection program developed.

DEVELOPMENT OF THE PROGRAM

Several municipal health departments had meat inspection services which were operating without benefit of proper physical establishments or any uniform pattern of antemortem or postmortem procedures. The meat products from such inspection services were not acceptable for sale outside the city, and in many cases were instituted as just another method of establishing trade barriers between cities and maintaining a so-called closed shop.

It was conceived that a system designed to unify the local services under state supervision would be advantageous and would eliminate the existing trade barriers between cities and permit free intrastate movement of meat and meat products between state-approved local services, without benefit of additional local inspection. The matter was discussed with several health officers and met with their wholehearted approval.

The Colorado State Board of Health has broad regulation-making powers conferred on it by the legislature, so the general plan was discussed with the members and received their sanction. The Veterinary Public Health Section was granted authority to draft such a plan for consideration and ultimate adoption.

It must be admitted, without pride, that existing slaughtering establishments within the state were in extremely unsanitary conditions, without even the basic elementary facilities necessary to properly slaughter animals for human consumption. It became necessary to promulgate regulations stipulating the minimum acceptable standards for the operation of all abattoirs within the state, regardless of whether they were operating under state approval, which is an optional procedure at present. This was done, and it is most gratifying to report that many substandard establishments have either been closed or are in the process of reconstruction in compliance.

The minimum standards so adopted are simple and concise, realizing fully that they represent an initial movement to eliminate the completely undesirable operation, and also that they are applicable to all establishments in the state—including the small rural plants which have a very small volume of kill, mainly custom slaughter for the farmers in the community. As time passes and compliance is reasonably complete, it is anticipated that these standards will be made more stringent.

Director, Veterinary Public Health Services, State of Colorado, Denver.

Presented before the Section on Public Health, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

REGULATIONS FOR ABATTORS

The following regulations are now in force:

I) Nothing in the regulations applies to a farmer slaughtering animals on his own farm, which are the products of his own raising for his own use, or the use of his immediate family, and who neither sells, gives away, barters, nor trades any portion of such meat products.

It must be realized that a farmer's stock is his own personal property, and the only regulations that the health agencies may legally institute are those dealing with his products when they enter commercial trade channels.

II) Each meat slaughtering establishment, and each establishment processing, curing, smoking, or otherwise preparing meat or meat products for human consumption within the state of Colorado, shall be so constructed as to permit maintenance in a clean, sanitary condition at all times with adequate drainage. All floors must be of concrete, tile, or other acceptable impervious material, sloped to a drain, and they shall be maintained in good repair. The drain must be trapped and connected to a sanitary sewer or acceptable septic tank. The discharge of water and/or packing house waste directly on the ground or directly into any river, creek, or other body of water is prohibited.

Proper packing house waste disposal is one of the most difficult problems confronting the health departments in rural areas. Blood carries a biochemic oxygen demand (b.o.d.) as high or higher than most other industrial wastes, and its discharge directly into rivers and streams reduces the oxygen in the water and creates a serious stream pollution problem. Colorado spends large sums of money each year to stock its streams, as fishing constitutes one of the main tourist attractions. Reduction of the oxygen in these streams, by pollution, results in high mortality of the fish. Most slaughtering houses in the state have constructed their plants along river and stream banks in order to utilize that convenience for the discharge of their wastes. less the establishment is connected to a municipal sewage system, the health de-partment requires that all blood and meat scraps be trapped on the killing floor, and the balance of the wastes, following proper settling procedures, may be run into a tile field or through a sand filter. Where space permits, discharge into a broad irrigation system will be permitted.

III) The walls of all rooms where animals are slaughtered, or where meat and meat products are cut, cured, smoked, or otherwise prepared must be constructed of smooth, impervious material to a height of at least 6 ft. from the floor, and shall

be kept clean at all times. The space above 6 ft. from the floor may be of rough lumber but shall be weather-tight and in good repair. The ceiling may be of rough lumber, but of sufficient height to permit carcasses to hang so that they do not contact the floor, and they shall be weather-tight and in good repair. The junction of the floor and wall must be coved to a radius of 1 inch.

IV) All such establishments must be well lighted and ventilated. All openings to the outside shall be screened or otherwise protected effectively against the entrance of flies, insects, or rodents. A safe, adequate water supply, both hot and cold, under pressure must be available during operations, so that it may be used for cleaning floors, walls, and equipment in all slaughter processing rooms. Water used in contact with meat and meat products must be of potable quality.

In rural areas, the obtaining of potable water supplies is not always a simple procedure. Before operation, water samples should be submitted to the laboratory for bacterial analysis, and plants should not be permitted to operate until satisfactory samples are obtained.

V) All killing and processing rooms must be equipped with hand washing facilities, with hot and cold running water, soap, and individual towels. Such hand washing facilities must not be used for the washing of saws, cleavers, knives, or other meat cutting equipment.

For new construction, the installation of mechanical, foot-pedal operated faucets is recommended. This is considered the most sanitary and is a water-saving device.

VI) Each establishment shall have access to a sanitary toilet or privy within reasonable distance. If such toilet facilities are located within the establishment, they must be entirely separate and apart from rooms where animals are slaughtered or where meat is processed or handled. Doors must be self-closing, and toilet rooms must be vented to the outside air.

VII) All trucks, trays, tables, chopping blocks, chutes, platforms, and racks, and all knives, cleavers, saws, and other cutting utensils must be washed and cleaned daily. All utensils used in direct contact with the meat must be stored in a clean, dustproof compartment or otherwise protected.

VIII) The aprons, smocks, or other outer clothing of employees who handle neat in contact with such clothing, must be of readily washable material and kept clean at all times.

IX) All slaughtering and meat-processing establishments shall dispose of offal, trimmings, etc. daily by means of rendering, incineration, or other acceptable methods. Trimmings and offal must be held in waterproof metal cans with tight fitting metal lids which must be cleaned daily.

X) All holding pens, corrals, chutes, and the surrounding premises must be kept clean, free of boxes, crates, and refuse, and must be adequately drained.

XI) If knocking pens are used they must be constructed of concrete or metal with metal doors. Hog-scalding vats must be of concrete or metal with provision for proper draining.

It has been necessary in some cases for the Department to order the construction of knocking pens to eliminate the unacceptable practice of shooting animals instead of stunning or sticking in the conventional method of slaughter.

XII) No portion of any establishment slaughtering, dressing, handling, processing, or selling meat or meat products may be used for living or sleeping quarters.

XIII) Every slaughtering establishment in the state of Colorado must maintain proper and adequate records of all animals purchased and/or slaughtered—with dates, from whom purchased, and to whom sold. Such records are to be at all times available to authorized representatives of the Colorado State Department of Public Health and authorized representatives of the health department in whose jurisdiction such establishment is located.

Nearly every interested agency of state government had plans for the construction of slaughtering establishments, designed to conform to their ideas of what such plant should be. There was no uniformity, and a farmer desiring such plans received as many different sets as there were agencies. To correct this, the state health department called a meeting of all other interested groups, and it was agreed that a graduate student in the School of Agricultural Engineering would be assigned the task of drafting plans and specifications for an abattoir in conformity with the health department regulations, which would ultimately be approved by all of the other This will be the standard state agencies. plan and will be distributed by all groups. To assist in the drafting, the state health department contributed a small sum to the

Comparable standards for construction and operation, as outlined for the meat packing industry of the state, were set forth for the poultry and rabbit industries, giving to these operators a uniform code of operation and, incidentally, eliminating the practice of "under the tree" slaughter. By this requirement, it has been possible to exclude from sale within the state, wild jack and cottontail rabbits from areas where they are salvaged following destruction as agricultural pests.

It will be appreciated that the standards just set forth were established for the purpose of creating suitable physical structures in which to slaughter and process meat and meat products and deal with basic sanitation. The functional aspects of meat inspection are not covered, so it was necessary to promulgate rules and regulations embracing that phase of the program.

MEAT INSPECTION

For the State Department of Public Health to appear before the legislature and request mandatory meat inspection when no such services existed would have been sheer folly. With that in mind, the program was promulgated as a voluntary participation measure with each local meat inspection unit invited to cooperate as part of a long range plan. It is believed that in such long range planning, enough local services will be operating under voluntary state approval to make it reasonably certain that the state legislature will pass the desirable mandatory provisions. The approved services will be changed from potential legislative opposition to complete support, and the legislators will be obliged to protect the majority then under inspection.

The regulations providing for the creation of state-approved meat inspection services and stipulating the basis for such approval are as follows:

Any municipal and/or county meat inspection service in the state of Colorado may apply to the Colorado State Department of Public Health for status as a "state-approved meat inspection service." Upon receipt of such application, the State Department of Public Health shall conduct a survey of said meat inspection service and if found in compliance with the regulations as set forth, state approval shall be granted. A certificate indicating such approval shall be issued to the agency subject to the provisions of the rules and regulations:

The unique feature of this provision is that the state will not approve any individual packing houses, but will confer approval on the meat inspection unit of the local subdivision. This procedure creates a wholesome competition between meat inspection units of local government, as well as stimulating individual packing houses within the units. Abattoirs that are in compliance with standards usually place a certain amount of pressure on the local health department to bring the substandard establishments into conformity, as they retard the approval of the entire unit. In other words, the state is relieved of the responsibility of bringing the poor establishments into conformity by the better operators who seek approval.

 The Meat inspection service must be administratively assigned to a city and/or county health department or a district health unit.

It is believed that the State Department of Health can administratively work with the local health units with a feeling of mutual coöperation. This provision also precludes the employment of inspection personnel directly by the packing houses.

Prior to this program, the State Department of Public Health issued deputy cards to any veterinarian in the state who had a notion that he wanted to conduct meat inspection. This authority was grossly abused, with subsequent elimination of the practice. Under the approval system, the veterinarian is employed by the local health department, and the state is not charged with selecting personnel or involved in the arbitration of local personality problems. Our only requirement is that the veterinarian be licensed and in good standing in the state.

 All meat must be inspected by a graduate licensed veterinarian, or such inspection must be administratively under the supervision of a graduate licensed veterinarian.

Every veterinary public health program in Colorado has been designed to utilize the services of the local practicing veterinarian. The requirement that all inspections shall be under the direct supervision of such a man has held up the approval of several local services. Many areas of the state are devoid of veterinary services, and it becomes necessary to reject their applications for approval on that basis. In areas where veterinarians are available, it is not an easy task to get them interested in the supervision of their local meat supplies because of the pressure of practice.

3) Antemortem and postmortem examinations must be conducted on all animals and animal carcasses slaughtered for human consumption. Antemortem and postmortem examinations must be conducted according to the "Regulations Governing the Meat Inspection of the U.S. Department of Agriculture" edition of January, 1947, parts 9 and 10, and as amended. Such regulations become part of the regulations of the Colorado State Department of Public Health, with all other rules and regulations which have been and may be promulgated by the State Board of Health.

This section is self-explanatory, and is the method of standardizing functional procedures in all approved services.

4) No animal may be slaughtered for human consumption unless an inspector from the state or state-approved meat inspection service is present throughout the entire slaughtering proceedings.

Every approved meat inspection service must report to the State Department of Public Health at intervals as requested, giving information desired. Proper and adequate records and forms must be maintained by each approved meat inspection service, such records and forms to be made available to the State Department of Public Health upon request.

6) Upon approval of the meat inspection service of any city, county, or district health unit, an official inspection number will be issued by the State Department of Public Health. The approved service must provide itself with an adequate number of meat inspection stamps bearing such number,



Fig. 1—Facsimiles of the stamps adopted by the State Department of Public Health for use by official state-approved meat inspection services.

and of the proper design. It is unlawful for any meat inspection service to use such stamp, or facsimile thereof, unless it is an approved meat inspection service, and then only on meat and meat products processed under its jurisdiction. Meat inspection stamps must at all times be retained in the custody of an inspector of the approved meat inspection service. Such official stamps must be surrendered to the State Department of Public Health upon the loss of approval.

Figure 1 shows facsimiles of the stamps that have been adopted by the State Department of Public Health for use by official state-approved meat inspection services.

7) It is unlawful for any meat or meat products to be sold within the jurisdiction of a state-approved meat inspection service unless said meat or meat products have been inspected by state-approved meat inspection service, or by the meat inspection service of the Bureau of Animal Industry of the U.S. Department of Agriculture and bears the official stamp of such service on all primal parts, cod fat, kidney fat, liver, tongue, and beart.

8) Meat and meat products inspected and passed by one state-approved meat inspection service have free movement and sale within the jurisdiction of any other state-approved meat inspection jurisdiction without benefit of additional inspection.

These sections are the so-called "inducement" clauses, and are used to break down the trade barriers which exist between many of the local subdivisions. Meat processed in one approved service must be accepted by another at face value without being subject to municipal statutes. This,

of course, refers to standards of inspection and is not designed to deprive cities of the right to condemn products which have been spoiled or are otherwise unwholesome due to factors occurring outside of inspection, such as improper handling or spoilage in transit.

9) All slaughtering and meat processing conducted under the jurisdiction of a state-approved meat inspection service must be done in an establishment under the direct supervision of the service. The meat inspection service must inspect all animals slaughtered in establishments under its jurisdiction.

It has been a common experience to find that municipalities requiring that meat sold within their city limits be from inspected sources, will provide such service in their slaughterhouses, but will only interest themselves in those carcasses destined for sale in the city. Those animals killed for sale in the county territory are not subject to inspection. It can be appreciated that an establishment cannot operate under partial inspection, as there is no satisfactory method of control. One large city in the state, with a well-organized service, has been rejected for approval because it will not maintain inspection on its entire kill.

10) Nothing in the regulations restricts or prohibits a livestock producer from slaughtering animals, on his own premises, that are a part of his own herd and are for his own consumption, provided, however, that no portion of such carcass so slaughtered shall be sold for human consumption.

11) The State Department of Public Health will survey at irregular intervals, with or without previous notice, any state-approved meat inspection service, for the purpose of determining compliance with the regulations. For failure to comply, the State Department of Public Health may suspend or revoke its approval after reasonable opportunity to be heard by the proper administrative official of the State Department of Public Health.

Under the administration of the Veterinary Public Health Section of the State Health Department, two meat bills were prepared and introduced into the last session of the legislature. One was designed to eliminate the use of artificial color in meat and meat products, sausage and other casings, and the use of chemical preservatives or antiseptics in fresh meat products. The other bill gave a legal definition to hamburger, ground beef, and chopped beef, and limited the ingredients to the striated muscle of beef with a fat maximum of 25 per cent. Both of these bills were passed and are now in full force in the state. It is hoped that other states

will follow Colorado and outlaw the use of artificial coloring of meat products and casings. It has been stated accurately that the states are the workshop for the federal government in matters of this nature, and it is believed that the elimination of this practice by enough states will result in similar action by the U.S. Bureau of Animal Industry.

At the present stage of development of this program, education is of primary importance—education not only of the meat packers and local health departments to stimulate a desire for good meat inspection, but also education of the local practicing veterinarians in order that they may fully appreciate their civic responsibilities and the obligations that they must assume in the conduct of a well-rounded veterinary public health program.

Proper meat inspection administration embraces two basic functions: The protection of the meat food supply of a community, in order that such products originate from disease-free sources, is the most commonly understood function and the reason for the establishment of such services in most agencies of government; the role of such services in the epidemiologic study and reporting of disease incidence has received little or no consideration by the health agencies. This program differs from routine food inspection, inasmuch as it is not confined to sanitation procedures alone, but deals with the animal body in sickness and health and requires a knowledge of disease processes. I feel that meat inspection bears the same relationship to the veterinarian as the coroner does to the practicing physician.

In the Colorado state health department, this function is administratively a section in the Divison of Preventive Medical Services, as it is considered an integral part of the disease-control program.

DISCUSSION

DR. O. SUSSMAN (N. J.): In New Jersey, private practicing veterinarians often stamp animal carcasses with their own stamps without benefit of antemortem or postmortem inspection. This is usually done in connection with a private professional call. The practice tends to minimize the importance of meat inspection and should be condemned as unethical. I propose that the following resolution be adopted by this section:

The Section on Public Health condemns as unethical the practice of stamping animals and animal carcasses as inspected and approved by a veterinarian without antemortem and postmortem examination.

DR. M. BAUM (Colo.): I cannot agree that this resolution is needed. The individual provisions of state and municipal meat inspection laws vary so

widely that the practices referred to by Dr. Sussman may be entirely legal in some jurisdictions. If the practice must be corrected, it can be done most effectively by educating the practicing veterinarians by that agency of state government responsible for the conduct of meat inspection. The existing code of ethics of the AVMA now in force, would suffice for this purpose, without an additional sectional resolution.

DR. E. C. CANNON (Kan.): What are the qualifications, training, and experience prerequisite to employment of veterinarians in Colorado's pro-

DR. BAUM: We have not been highly selective in that respect, as we have difficulty recruiting veterinarians in practice to conduct the program in local departments.

We desire to adhere rigidly to the stipulation that all approved services be conducted or supervised by a licensed veterinarian. It is felt that such licensure is the prerequisite. We are attempting to bring all veterinarians in local meat services into Denver twice a year for seminars and in-service training at BAI and Denver city plants. This is not simple, as practitioners cannot easily take this time away from their practices.

DR. CANNON: What provision is made for the disposal of condemned carcasses and parts?

DR. BAUM: They are consigned to rendering plants when available; if not, they are denatured in conformity with BAI specifications.

conformity with BAI specifications.

DR. G. E. BOWLER (Mich.): How is Colorado's program being financed?

DR. BAUM: The base line of the program is the delegation of the state's authority to the local level. Obviously, it then becomes the responsibility of the local level agency to finance its own program. We have not attempted to influence the local departments in this regard. Tax-supported meat inspection is the most desirable. If this cannot be done, packer-financed inspection must be the alternative. The packer pays for the service directly into the local treasury in an ear-tagged fund which, in turn, is utilized to defray all costs of inspection.

DR. BOWLER: Is there any particular advantage in having such a program administered by either the department of health or department of agriculture of the state?

DR. BAUM: We are striving for a safe, wholesome meat supply. There is only one correct method of inspecting meat, and I believe it immaterial which agency of government does the job, as long as it's done properly. Colorado's statutes make the service a function of the state health department, but other states delegate it to other agencies.

The lack of cooperation between the physician and veterinarian is due to the physician's lack of knowledge of the importance of the animal diseases transmissible to man. Invariably, if the animals of a nation are not healthy, the people are not healthy.—Donald Slaughter, M.D., South Dakota.

Except for the meat and food inspection programs, veterinary activities con. istently fail to reveal an intentional goal of public health benefit in their design or execution.

—L. R. Davenport, D.V.M., Illinois.

Roentgen Ray vs. X-Ray

In response to an item which appeared in the JOURNAL for December, 1948 (ad p. 28), which suggested that there might be a preference for the term roentgen ray or x-ray, we have been informed that:

"Actually there is an orderly and proper use for both terms. In order that an understanding can be had for some names of electromagnetic radiations found in the x-ray spectral region, the following information is given for clarification.

"Gamma rays and x-rays are both radiations which begin in the electromagnetic spectrum, with wave lengths just shorter than those in the ultraviolet region (12 x 10-8 cm. and shorter) and extending to the radiations associated with cosmic rays. Both gamma rays and x-rays may overlap for all portions of the spectrum. This is so because the former is originated by energy transformation within the nucleus of an atom and the latter from the orbital electrons of the atom. This is a physicist's concept and probably the only valid one.

"The rays produced by an x-ray tube, or better yet the Coolidge tube, are not, strictly speaking, x-rays but are a mixture of radiations. This mixture has a very small portion of x-rays but mostly consists of bremsstrahlung (braking radiation). Radiation of this type is produced when highenergy electrons are suddenly stopped and give up their excess energy as photons or electromagnetic rays. The proper terminology for the mixed radiation from the Coolidge tube is roentgen rays.

"Another term that may be encountered is grenz rays. These are the softer and less penetrating x-rays occurring near the ultraviolet boundary. The radiologists use the aluminum and copper filters to remove them, since they are likely to cause x-ray burns at relatively low dosage.

"It is realized that the biologic effects of the above radiations are equal at monoenergetic levels. This being true, it is of minor interest to the ordinary user of electromagnetic radiations. But to the editor and to the informed reader, it is disconcerting to find gross errors in literature in regard to these definitions."

[The article in the December, 1948, issue of the JOURNAL referred to by our correspondent has no bearing whatsoever on the difference between roentgen ray and x-ray. The article referred only to the common error of capitalizing the x in x-ray and the r in roentgen ray.—EDITOR.]

Aureomycin is a specific for every common form of pneumonia—bacterial and viral.—Brit. M. J., Aug. 27, 1949.

Encephalitis as a Public Health Problem

EDMUND R. PRICE, D. V. M.

Atlanta, Georgia

THE FORMS of encephalitides that are, or may in the future be, public health problems are so numerous that it is necessary to limit this report to a discussion of three of the most common ones: St. Louis encephalitis, eastern equine encephalomyelitis, and western equine encephalomyelitis.

Because of their importance to public health as diseases in other parts of the world, and the possibility of their being imported into this country, Japanese B encephalitis, Venezuelan equine encephalitis, louping ill disease, Australian X disease, Russian spring-summer fever, and others warrant surveillance by veterinarians in private practice as well as those engaged in public health work.

These diseases are not new. As early as the middle of the nineteenth century, both eastern and western veterinary practitioners recognized and reported outbreaks of a febrile disease of horses, with symptoms comparable to those observed in equine encephalomyelitis today. The literature contains information on about ten major epizoötica occurring between 1847 and 1930; undoubtedly, there were many other outbreaks that were not recorded.

It is of statistical interest to note that reports of the Bureau of Animal Industry for 1912 show that 16 states had a high incidence of the disease. Kansas and Nebraska had a most severe incidence of infection; estimates show that in these two states about 35,000 horses died of this dis-

Equine infections involving the central nervous system have been called by many names, depending upon the part of the country where they occurred and the experience of the attending veterinary practitioners. Some of the more common names were: Kansas-Nebraska horse plague, forage poisoning, cerebral-spinal meningitis, and Borna disease.

Great impetus was given the study of the encephalitides in the early 1930's by several discoveries. The most important of these

The Communicable Disease Center, Public Health Service, Federal Security Agency, Atlanta, Ga. 'from Veterinary Public Health Division, Kansas City, Mo.)

Presented before the Section on Public Health, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14,

1949.

contributions was made in 1931 when the causal agent of western equine encephalomyelitis was isolated from the central nervous systems of horses by Meyer, Haring, and Howitt.1 They were able to make successive passages of the virus through horses, monkeys, rabbits, guinea pigs, rats, and mice. The first recovery of "encepha-litis virus" from human beings was made by Howitt² in 1938 when the western equine encephalomyelitis virus was successfully isolated from the brain tissue of a small child.

COMMON FORMS OF ENCEPHALITIDES

The forms of encephalitides most common and most significant as public health problems at this time are the three already

emphasized.

St. Louis Encephalitis .- St. Louis encephalitis, specifically, apparently first occurred in and around the town of Paris, Ill., in 1932, at which time it was believed to be acute encephalitis (lethargica). The following year, it reached epidemic proportions in the Kansas City and St. Louis areas, where more than 1,100 human cases were reported.

Evidence of the disease either in the form of virus recovery3 or the presence of neutralizing substances in the blood4.4 indicated that the malady was fairly widespread over central and western United States. It was at first believed that horses were not susceptible to this disease; however, later studies proved that they were susceptible to the St. Louis encephalitis

virus.

Eastern Equine Encephalomyelitis .-Eastern equine encephalomyelitis was first recognized as a specific central nervous system infection of farm horses in the Middle Atlantic States in 1933 b: Ten Broeck and Merrill.8 The same year these workers, and Giltner and Shahan[®] working independently. isolated a virus from horses which proved to be immunologically and serologically different from other known strains. virus was recovered from the central nervous system of human beings in 1938 by two groups, Fothergill and coworkers, 10 and Webster and Wright. 11

During 1938, there was an epidemic in Massachusetts where 44 human cases were reported, mostly among children; of this

group, 65 per cent died. This disease appears to have the highest mortality of the three common encephalitides found in this country. It is interesting to note that the median date for the human epidemic in Massachusetts was about two weeks later than the median date reported for the equine epizoötic. In the latter, 248 cases were reported, with a fatality of about 90 per cent.

Available data apparently do not give a clear picture of the distribution of this virus in the United States, but it is most commonly found in the Eastern Coastal, and Southern Gulf States. It is also found in Canada, Mexico, Panama, Brazil, and Cuba.

Western Equine Encephalomyelitis.— This type is frequently referred to as epizootic equine encephalitis or W. E. E. It has received more study than either St. Louis encephalitis or eastern equine encephalomyelitis. Specific knowledge of it dates from the work of Meyer¹ and his associates and Howitt.²

The incidence of western equipe encephalomyelitis is reported annually to the Bureau of Animal Industry by nearly every state west of the Appalachian Mountains. The highest incidence is found in the agricultural areas of the Middlewest and the west coast. Western equine encephalomyelitis appears in horses either as scattered cases or as epizoötics. For instance, in 1948. 9 of the 10 states in the Missouri River Basin reported a total of only 656 cases: whereas in 1941, 9,273 cases were reported in the same states. During the latter year, the largest human epidemic ever reported occurred. It involved several midwestern states and part of Canada and was centered in Minnesota and North Dakota. than 3,000 human cases were reported, the mortality varying from 8 to 15 per cent. The human mortality in this instance was considerably lower than that generally reported in equine epizoötics, where the rate may be as high as 25 to 30 per cent.

Since the 1941 human epidemic, attention has focused on at least three additional outbreaks which have occurred in California and Louisana. Knowledge of the annual rate of human infection is fragmentary. There are, however, about 100 cases reported annually throughout the midwestern states. Public health officials believe these represent only a portion of the cases which actually occur.

DIAGNOSIS

The three diseases which have been outlined are so closely related that it is impossible to differentiate between them clinically or pathologically. The only reasonable

clinical diagnosis that can be made is that of encephalitis. To make a specific diagnosis, it is necessary to identify the virus by serologic determinations or by isolation of the virus itself.

In making serologic determinations, the following procedures are important: Two specimens of serum should be taken from the patient, one at the onset of the disease and another late in convalescence. The specimens should be tested simultaneously for the presence of complement-fixing and neutralizing antibodies. If the first specimen is negative and the latter positive, a positive diagnosis is made. It should be borne in mind, however, that if the second specimen is obtained before sufficient antibodies have formed in the blood, a false negative diagnosis will result. If antibodies are present in both specimens, the patient apparently had the disease at some previous time.

The method of making a positive diagnosis by virus isolation from routine blood specimens is not at all satisfactory, due to the very temporary circulation of the viruses in the blood stream. Furthermore, no use can be made of spinal fluid in this regard because of the total absence of virus The best sources of main this tissue. terial for virus isolation are the brain and cord. These tissues should be collected aseptically. It is possible to recover viruses when these tissues are taken soon after death. However, the most successful time for recovery is when the animal is sacrificed. A 10 to 20 per cent tissue emulsion is made in physiologic saline solution and 0.3 cc. of this is injected intracerebrally into 6 young, albino Swiss mice. Serum samples from injected mice which show symptoms of the disease are tested for neutralizing and complement-fixing antibodies. This test may be confirmed by inoculating mice or guinea pigs immune to certain known viruses.

CARE OF PATIENTS

Care of the human patient is limited to symptomatic treatment, since as yet there is no specific therapeutic agent with which to combat the disease once a person becomes infected.

Animal care consists chiefly of good nursing in quiet, cool, comfortable, well-bedded quarters, protected from sun and rain. The use of encephalomyelitis antiserum has not proved satisfactory. Veterinary vaccines are available for both eastern and western encephalomyelitis and they are effective if properly administered. Ten days to two weeks is necessary to establish immunity against the disease.

EPIDEMIOLOGY

The epidemiologies of these virus infections have not been clearly defined. However, they are extremely complicated. At present, the reservoirs are unknown. Many insects are capable of transmitting the disease and a few common ones have been found in nature with the virus in their bodies.

There is no doubt that mosquitoes play an important role in the transmission of the disease. Kelser,12 in 1933, using Aedes aegypti and a strain of western equine encephalomyelitis virus, was the first to transmit the disease experimentally by mosquitoes. He allowed these mosquitoes to feed on inoculated guinea pigs; six days later, the same mosquitoes were allowed to feed The mosquitoes on healthy guinea pigs. which had fed on the infected pigs fortyeight to seventy-two hours after inoculation readily transmitted the disease for as long as eighteen days. The mosquitoes which fed ninety-six to 120 hours after inoculation readily transmitted the disease six days later, but did not transmit it on the twelfth day. The 144-hour lot failed to infect healthy guinea pigs. Kelser, using two groups of the above mosquitoes totaling about 110 in number, readily infected a horse with the disease.

Merrill and associates¹² experimentally transmitted eastern equine encephalomyelitis in 1934 with several species of salt marsh mosquitoes of the Aedes group (A. cantator, A. taeniorhynchus and A. sollicitans). In 1948, Howitt, Dodge, Bishop, and Gorrie¹⁴ recovered eastern equine encephalomyelitis viruses from naturally infected Mansonia perturbans mosquitoes found on farms in Burke and Jenkins counties, Georgia, where several cases of encephalitis had previously been reported. Hammon and associates¹⁵ while working in Yakima Valley, Washington, from 1941 to 1944, were frequently able to recover both western and St. Louis viruses from Culex tarsalis.

Several other vectors of the disease have been demonstrated. Kitselman and Grundmann, in 1940, found the virus of western equine encephalomyelitis in three of five lots of Triatoma in pastures near Garrison, Kan., upon which infected horses had grazed the previous year. Howitt and associates, in 1947, found that chicken lice (Eomanacanthus stranimeus) should be considered as one of the vectors of eastern equine encephalomyelitis. These workers obtained Mallophaga from chickens on a farm near Alexandria, Tenn., and were able to make six passages in young mice. Identification of the virus was then determined by means of the neutralization test.

It is believed by many workers that mites play a very important role in the transmission of these viruses, probably a much more important one than is indicated by the evidence available at present. The chicken mite (Dermanyssus gallinae) was found by Smith, Blattner, and Heys,18 in 1944, to harbor the virus of St. Louis encephalitis in nature. From mites19 collected from the same chicken house at a later date, they were again able to demonstrate the presence of this virus. These same workers were able to demonstrate experimentally the transovarian passage of the virus of St. Louis encephalitis in mites.20 Sulkin21 recovered western equine encephalomyelitis viruses in mites obtained in Dallas County. Texas, in an area where equine encephalomyelitis had recently occurred. Hammon, and associates22 working in Kern County, California, isolated the virus from wild bird mites (Liponyssus sylviarum). These mites were found in a yellow-headed blackbird's nest.

Howitt and associates, "during the summer of 1947, obtained chicken mites from chicken houses in Shelbyville, Tenn., in an area where encephalitis had been sporadic in children. After six passages in mice, it was found to be lethal for embryonic eggs in twenty-four hours and for guinea pigs in forty-eight hours. Guinea pigs showed symptoms of encephalitis; neutralization tests showed this virus to be eastern equine encephalomyelitis. The experiment was carried further, using immune guinea pigs. Those immune to western and St. Louis types died; those immune to the eastern type lived.

This is only a brief review of research which has been completed in attempts to clarify the epidemiology of these diseases. Much work has been done and a considerable number of facts are known. At the present time, however, these facts have not been fitted into a clear epidemiologic picture. Those engaged in this research believe that mosquitoes play an important part in the spread of this disease.

CONTROL

Until all of the transmitting agents of the disease are known, and until the ecologies of these viruses in nature are determined, the best and most economic control procedures cannot be devised. Satisfactory vaccines are available for the equine population, the most commonly used being of chicken embryo origin in eastern, western, or polyvalent form. It should be administered in two doses. Immunity develops in ten days to two weeks. Experiments indicate that immunity to severe artificial exposure lasts at least six months.

At present, it appears that less than 10 per cent of the horses are being vaccinated annually. It is believed that if 60 per cent were vaccinated annually, considerable control of the equine disease would be obtained. This, of course, imposes practical problems well known to all veterinarians.

Information at hand suggests that the measurable incidence of infection might be affected by mosquito control operations. It has not been determined whether effective control can be accomplished by the control of specific vectors. If it were determined that one, or even a limited number of insects are responsible for the transmission of these diseases, it would appear that insect control might be the most effective and economic means of control.

The Public Health Service has been engaged in studies of the virus encephalitides in various parts of the country. To continue, and to emphasize these studies, a project of investigations has been established in southeastern Kansas.

The project is an epidemiologic field investigation of encephalitis infections within a prescribed area. Because of past and present infection rates, both in horses and human beings, the counties of Bourbon, Allen, and Anderson, in Kansas, were chosen for this investigation.

The investigations are being carried out in two phases. One deals with the comparison of certain phenomena throughout the three counties. Horse and human infections are being tabulated; infections in domestic and wild fowl are being measured; detailed climatic records are being maintained; and mosquito and other insect populations are being ascertained. The data on all of these will be analyzed and evaluated.

The other phase deals with the ecology of the viruses in nature. An attempt will be made to determine the reservoir of the viruses and the modes by which the vectors become infected. Investigations during the present season involve a search for the active virus in young birds and their parasites, and a search for the active virus in insects which feed on young birds and also on the horse and man.

The effective undertaking of the project has necessitated the development of new techniques and specialized methods of operation; it is intended that these will be published at a later date. A large volume of specimen material is being accumulated; this material will be processed and reports on the results will be forthcoming. The work is being accomplished by a professional team which includes an epidemiologist, an entomologist, an ornithologist, and a veterinarian.

CONCLUSION

Much has been written by research workers in their studies of eastern and western equine encephalomyelitis and St. Louis encephalitis. These investigations have led to the development of methods for the diagnosis and control of the disease, and considerable contributions to the determination of the vectors have resulted. However, ecology of the disease in nature and the causes of epidemics and epizoötics still remain obscure.

SUMMARY

This report summarizes briefly some of the more important phases in the study of eastern and western equine encephalomyelitis and St. Louis encephalitis. A survey of the literature indicates that these clinically related diseases are widespread in nature and have been present in this country for many years. In the early 1930's, great impetus was given to their study when the causal agent of western equine encephalomyelitis was isolated from the central nervous system and proved to be a virus. During the same decade, the virus was first recovered from human beings. Various workers later found that these diseases, while having the same clinical pic-ture, differ serologically and immunologically. Differential diagnoses can be made only by serologic determination, or isolation and identification of the virus. At the present time, there appears to be a great need for a more effective and economical method of control for these diseases.

Inasmuch as the disease is apparently more common in man than statistics indicate, the Public Health Service, through the Communicable Disease Center, is undertaking further studies of the problem in the Middlewest.

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Benzine hexachloride is effective, as a dip, against sheep scab mites; and, as a spray, against sarcoptic mange of swine .-USDA.

Rinderpest Outbreak in Formosa

An outbreak of rinderpest among Formosa's 300,000 water buffalo and cattle during October, 1949, was the first time in many years that this disease had been seen on the Island. Early in October, 76 animals became ill with fever, but it was not until late in the month, after 30 animals had died, that the disease was diagnosed as rinderpest. It was believed to have started from a shipment of hogs from nearby Hainan Island.

The Food and Agricultural Organization of the United Nations was requested to act in the matter, since it had done considerable work on the production of rinderpest vaccines in southeast Asia. Dr. K. V. L. Kesteven, of Australia, FAO's staff veterinarian. contacted Dr. Robert Reisinger (API '43). of ECA, who, having completed an FAO assignment on rinderpest control in Ethiopia, was familiar with the production of the vaccine. It was agreed that Dr. Reisinger should be sent immediately to Formosa to start vaccine production there.

The rinderpest vaccine laboratory in Bangkok, Thailand, sent the virus needed for making the lapinized vaccine to Hong Kong, where it was stored in the deep freeze of the Hong Kong Dairy Farm (one of the few in that area) until Dr. Reisinger picked it up en route to Formosa. Unless kept at extremely low temperature, it will not maintain its effectiveness.

The virus is injected into rabbits, each of which can produce 500 doses of lapinized vaccine within three days after inoculation. All cattle and water buffalo in the infected Taiwan area are being vaccinated, and movement of animals in and out of the area is being controlled to prevent spread of the disease.

Sheep Growing in the Balance.-There are fewer sheep in the United States than at any time since annual capitation was started following the War Between the States, or, when every small farm had its flock of sheep, with Ohio, Pennsylvania, and New York leading. Sheep growing on a large scale in the Rocky Mountain country has not fared so well. The cause is a long story. Sheep require tender care not only at lambing time but always. The loss in four western states (South Dakota, Wyoming, Colorado, Nebraska) of 150,000 head from exposure last year (BAI figure) was proof to that effect.

Of 268 cases of human brucellosis studied in Minnesota, about 85 per cent were caused by Brucella abortus .- Public Health Reports, Aug. 19, 1949.

Restraining Equipment on the Farm

It is estimated that \$100 million a year are lost from the bruising, crippling, and deaths that animals suffer in transit. No one knows how much, but a part of this loss happens right on the farm when animals are being sorted and loaded. Much of it can be averted by proper equipment. Veterinarians can render a genuine service by suggesting the construction of handling facilities on the farm. Alleys and chutes can be equipped with a cattle "squeeze" or stanchion to facilitate the treatment of animals. In addition to restraining the animals safely, they afford protection for the veterinarian.

Figures 1 and 2 are drawings originally published by the National Livestock Loss Prevention Board through the courtesy of the Sears Roebuck Foundation. They are reprinted in the JOURNAL for the convenience of readers in counseling with clients. Note that these drawings include provisions for adapting the alleys for cattle spraying. With a little ingenuity a "squeeze" or chute and stanchion could be incorporated into these plans which would greatly increase its

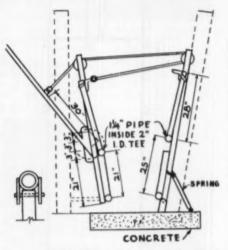
versatility (see fig. 2).

The increased gains from spraying beef cattle for heel fly control have been recognized for several years. This, in itself, is sufficient reason to have adequate livestock-handling facilities. Grub control is destined to assume a more prominent position in livestock management. The allocation of federal funds for intensifying the campaign against cattle grubs has been authorized, and Congress is expected to make an appropriation for the purpose. The tanning industry estimates that the damage by grubs causes an annual loss of \$12 million. High pressure sprayers are the most effective method known to combat this parasite, but holding alleys are almost essential for restraining the cattle.

Veterinarians, not realizing what a strategic educational position they occupy, have often failed to recognize how much they can influence their clients and a community over a period of years. Because they contact thousands of farmers, usually at times when they are in serious trouble and need help, a casual suggestion properly timed and appropriately phrased can often initiate a chain of reactions. After the farmer, several neighbors, the children, the dogs, and even the farmer's wife and the veterinarian, have spent an hour or two trying to corral an otherwise docile cow so that she may be bled or dehorned, the suggestion that hold-

ing alleys and chutes are wonderful for restraining cattle will be favorably received.

Veterinarians might suggest, and offer to coöperate with extension and agricultural workers in organizing a campaign against flies and grubs. The assistance of veterinarians would be appreciated in the educational part of the program by giving talks, procuring films (The National Livestock Loss Prevention Board, Livestock



-- National Livestock Loss Prevention Board
Fig. 2 -- Good cattle "squeezes" are now available or can be home-made (USDA).

(See p. 188 for fg. 1)

Exchange Building, Chicago, has several fine films), and assisting with demonstrations. This would seem to be one project that both the agricultural interests and verinarians could support whole-heartedly. There should be no reason for conflicting

opinions.

Successful practitioners often comment about how they have been able to train their clients through years of efforts. There is no doubt that continuous efforts directed toward definite goals will bring results. The savings that would accrue to a livestock-producing community during a period of thirty or forty years, as a result of having good equipment for sorting, handling, spraying, and loading livestock, can only be estimated. No one would deny, though, that

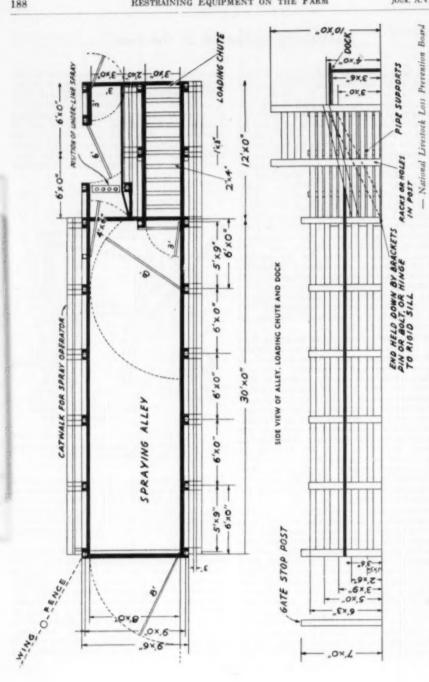


Fig. 1 — Utility livestock alley with sorting alley and loading chute. Underline spraying equipment unit may be placed in a partially opened gate at the end of alley. Place temporary post to gate opening will be 30 in. wide.

it would effect a huge saving. No one is in a better position to encourage the construction of these facilities on farms than the veterinarian. It would be another way to make livestock farmers more prosperous. On the part of the practitioner, the protection, the convenience, and the time saved would be ample reward for his efforts.

New Foot-and-Mouth Disease Vaccine

German veterinarians in the Western Zone of Germany found that foot-and-mouth disease virus in liquid mediums loses its ability to infect within four to eight hours, upon exposure to the vapors of silver chloride. Dried virus was not destroyed by the vapors, nor were cattle treated with the vapors prevented from, nor favorably influenced in, recovery from foot-and-mouth disease.

Intravenous injection of the dried virus exposed to silver chloride vapors caused swelling, degeneration, and necrosis of the liver and decreased the natural power of resistance.—Abstract of a Report on Experiments on the Effect of Chloride of Silver on Foot-and-Mouth Disease Virus by Dr. Koch and translated by Lt. Col. F. A. Todd, Washington, D. C.

Small Animal Hospitals

Most veterinarians show good taste and artistic appreciation in the erection of veterinary hospitals. From the series of exterior views (of which three are shown



The hospital of Dr. S. M. Dingwall, La Jolla, Calif.

herewith), it is evident that veterinarians know the value of attractive design, proper location, and appropriate landscaping as

Presented before the Section on Small Animals, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949. well as arrangement of rooms and facilities for efficient operation.

The pictures show that the external appearance of the animal hospital is made to conform to the type of architecture which prevails in the geographic area and under



The hospital of Dr. J. Stuart Crawford in Garden City.
Long Island.

the existing climatic conditions. There were signs of several types, but most of them conformed with the Code of Ethics in being of "reasonable size and dimensions." The



The hospital of Dr. M. A. Thom in Pasadena, Calif.

few instances in which violations of the Code were shown were self-evident and possibly unintentional.—H. C. Stephenson, D.V.M., Ithaca, N. Y.

I have faith that the veterinary profession will profit a great deal by making better contacts with all of the livestock groups. Many new contacts have been made and a certain number of veterinarians will be invited to appear upon national livestock programs. Likewise, we will invite some of these men to our meetings and let them tell us what they think about us. We have nothing to lose by that and much to gain.—W. A. Hagan, D.V.M., New York, while president of the AVMA.

In protein and mineral content, birdsfoot trefoil ranks with alfalfa.

SURGERY & OBSTETRICS

AND PROBLEMS OF BREEDING

Clinical Aspects of Vibrio Foetus Infection in Cattle

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VIBRIO FOETUS infection in cattle is a specific disease with a tendency toward localization in the pregnant uterus, where it produces pathology of the allantois-chorion resulting in abortion, retained afterbirth, cotyledonary and caruncular necrosis, and sterility

There is nothing new about this disease. Over thirty years have elapsed since Theobald Smith*-* and his coworkers first described an abortion disease in Brucella-free cattle and proved that the etiologic agent was the spirillum, V. foetus. In the same accurate and detailed manner that characterized the man, Smith worked out the etiology, symptoms, and pathology of the disease and the morphology and cultural characteristics of V. foetus.

Unfortunately, because of the widespread incidence of brucellosis at the time, little attention was given to Smith's work. As a result, his reports remained "buried in the archives" for over twenty years. It was not until the present decade that the establishment of large numbers of Brucella-free herds, together with the excellent researches of Plastridge and Williams, again drew attention to V. foetus as a major cause of pathologic reproductive phenomena in dairy herds.

INCIDENCE

The disease is more prevalent among dairy cattle in the United States than is generally realized. Plastridges reports finding it in 18 herds in the vicinity of Storrs, Conn. It has been found, to the author's knowledge, in New York, New Jersey, Ohio, Indiana, Michigan, Wisconsin, Missouri, Kansas, Nebraska, and Oklahoma.

Because of difficulties in diagnosis and

the insidious nature of the infection, the disease has been present, without recognition, in many herds for a long time. In a large Michigan herd that has been free from brucellosis for over twenty years, the average annual abortion rate has been over 8 per cent. In the past fifteen months, 9 cows in this herd have aborted and 27 were treated for retained afterbirth. Pure cultures of V. foetus were obtained from 8 of the 9 aborted fetuses, and all of the retained placenta cases (which included the 9 cows that aborted) had at some time during the involved pregnancies shown a serum agglutination titer to V. foetus antigen of 1:400 or higher, which indicates infection.³ Because of the clinical symptoms, character of the abortions, and the type of lesions present on the fetal membranes, the herdsman believes that the disease has been present on the farm for at least twenty years.

In a recent communication, Merriman¹o reports that V. foetus infection is the most important breeding problem in his practice in the rich dairy area of the "thumb" of Michigan. It is his opinion that the disease is the principal cause of abortion, retained afterbirth, and sterility in the Brucellafree herds in his area. In the territory around Lansing, served by our ambulatory clinic, there is evidence suggestive of V. foetus infection in over 60 per cent of the pregnancies that terminate in abortion, premature birth, retained afterbirth, and in the production of calves that are sick at hirth

In individual herds in which infection was present, Plastridge and Williams¹⁻⁸ found that the number of individually infected animals (as measured by the agglutination test) varied in the different herds from 10 to 60 per cent. This agrees closely with our own observations.

PATHOLOGY

A few cases in which a high agglutina-

Prevented before the Section on Surgery and Obstetrics, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

From the Department of Surgery and Medicine, Michigan State College, East Lansing.

tion titer indicated infection, and in which we suspected impending abortion, were sold for slaughter. We were able to obtain the intact pregnant uterus from each of these animals for study. The cases thus examined show quite clearly that V. foetus infection is primarily a disease of the fetal membranes and that the fetus suffers secondarily from a gradually increasing interference with the placental circulation.

In the various cases studied, from 10 to 50 per cent of the surface areas of the allantois-chorion were markedly diseased. In these areas, the cotyledons were of a dirty, whitish color and covered with a thin, cheesy deposit. The villi were entirely lacking the blood-red color that is considered normal. Most of them were necrotic. The intercotyledonary chorion in these diseased areas was thick, rough, and edematous. On its surface were numerous small greyish white plaques of various sizes that appear, in our experience, to be almost pathog-nomonic of the disease. The uterochorionic space contained varying amounts of a thick, rather gelatinous, fluid in which Vibrio organisms could be found in great abundance on microscopic examination. In the less diseased areas, most cotyledons showed individual or groups of diseased

In an aborted fetus, the main lesions are edema of the subcutaneous tissue and effusions into the large serous cavities of fluid more or less heavily tinged with blood. Frequently, delicate, loose, shreddy deposits of fibrin are found in the abdomen, on the pleura, and epicardium. The diseased fetus almost invariably has in its stomachs a very thick, turbid, yellowish, flocculent fluid. In normal fetuses, the stomachs contain a clear, colorless, translucent, viscid fluid which in older fetuses may contain a few pellets of meconium and some hair.

SYMPTOMS

While the symptoms of *V. foetus* infection in the individual are vague and variable, there is a definite herd picture that should lead the clinician to suspect the disease and that would suggest the necessary follow-up laboratory procedures required for a definite diagnosis.

In larger herds, the annual abortion rate, in the absence of brucellosis, will run from 5 to 20 per cent of the pregnancies. Plastridge⁸ found the average of several herds to be 12 per cent. A variable percentage of weak, slightly premature calves will be dropped that are sick at birth. Some of these die within a few days.

The incidence of retained afterbirth is high. Areas of edema of the chorion are

noted on manual removal, and many of the cotyledons and caruncles are necrotic. There is a history of a low conception rate for the whole herd and, frequently, individuals that have aborted or showed other evidence of severe placentitis fail to conceive for many months, or are permanently sterile.

Abortions occasionally occur as early as the seventh week of pregnancy, or they may occur as late as the seventh or eighth month. There is some indication that abortion is most likely to take place about thirty to forty-five days following infection in a pregnant animal.

Vibrio foetus infection differs from brucellosis in the important respect that the individuals do not carry the infection permanently, but tend to recover after a few weeks or months. Where monthly blood samples are submitted to the Plastridge agglutination test, titers rise rapidly and then subside after three to five months. Rapidly rising titers during pregnancy usually foreshadow abortion.

DIAGNOSIS

A specific diagnosis of *V. foetus* infection is based on the demonstration of the presence of the organism either by microscopic examination of properly stained films, or by culture of samples of suitable material from aborted fetuses, and by use of the agglutination tests whenever suitable antigen is available. These procedures have been worked out and reported¹⁻² and will not be discussed here.

CONTROL

At present, there is not much to suggest in the way of specific control measures. Fortunately, the disease is, to some extent, self-limiting and certainly cannot be compared to brucellosis as a major cattle plague. Its ravages are not severe enough to justify a program of test and elimination of infected animals. On the other hand, there is no longer any question but that it results in much economic loss and should not be ignored. The time is at hand for the various laboratories, whose responsibility it is to furnish the profession with diagnostic service, to equip and train their personnel to furnish diagnostic service as an important step in the control of vibrionic abortion.

In those areas where laboratory diagnostic service is available, early diagnosis, frequent blood testing to detect infected animals, and segregation of the infected from the noninfected cows are helpful in holding economic loss to a minimum. Vigilance in watching for, and isolating, impending

abortions is also practical and important as a control measure. Following abortion, three months' breeding rest is necessary to prevent a recurrence of the disease during the next pregnancy.

It would seem that protective vaccination should be an effective weapon against this disease. Vaccines are now being used experimentally in a small way, but, to date, no report has been made of their efficacy.

There is critical need for additional research on the malady. For instance, do bulls become infected, and, if so, are the organisms eliminated in the semen? The answer to this question should interest a country where millions of cows are bred artificially. We know nothing of the mode of transmission from animal to animal or through what body openings the organism is eliminated. We need surveys to determine the incidence, geographic distribution, and economic importance of the disease and, most important of all, we need to know how to prevent, control, or treat it.

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Control of Vibrionic Abortion.—One method of controlling vibrionic abortion in a herd is to isolate all aborting cows infected with Vibrio foetus and sell them for slaughter. Another method is to isolate all aborting cows, examine them for possible Vibrio infection, and treat them locally for uterine discharges. Those positive for Vibrio should be rested for three heat periods and then bred by artificial insemination.—C. D. Diesem, D.V.M., The Ohio State University.



-A Pantagraph Photo

Dr. A. H. Gaffin, Clinton, Ill., delivered the 170-lb. Guernsey calf (right) by cesarean section. Since there was no evidence of labor seventeen days after the normal gestation period had expired, the operation was performed. The dam recovered from the operation but due to a ruptured prepublic tendon, she was sent to slaughter. Dr. Gaffin is interested in knowing whether a cow has ever given birth to a calf larger than 170 lb.

A Persistent Mesonephros in a Pig

M. S. COVER, D.V.M., M.S.

Urbana, Illinois

On April 8, 1949, the genital tract and part of the urinary organs from a yearling Yorkshire gilt were presented for diagnosis to the College of Veterinary Medicine, University of Illinois (fig. 1). There was a cystlike structure on the anterior pole of the right kidney and a tube leading from the cyst to the wall of the uterus.

Fig. 1—A persistent mesonephros in a pig. a—Kidney; b—cyst; c—duct; d—cornus of uterus; a—corpus of uterus; f—ureter; g—bladder; h—duct in wall of uterus.

The anterior extremity of the right kidney was a rounded white cyst, approximately 4 cm. in diameter, which undulated on pressure (fig. 2). When the cyst was cut, a clear viscous fluid escaped, revealing a white glistening internal surface. The cavity was completely separated from the kidney, although its inner recesses were irregular and cavernous. The remainder of the kidney was normal.

From the Department of Veterinary Anatomy and Histology, College of Veterinary Medicine, and the Agricultural Experiment Station, University of Illinois, Urbana. The anterior extremity of the cyst was continued as a duct or tubule which extended to the wall of the uterus. The duct was 30.5 cm. long. Its diameter was 2 cm. at its origin and tapered to 4 mm. at its insertion into the wall of the uterus. There was a marked local constriction 8 cm. from the insertion. The interior of the duct was lined with a smooth, glistening, white membrane continuous with that of the cyst.

On dissection, it was found that the duct continued posteriorly for 10 cm. within the uterine wall. It entered the wall at the anterior extremity of the corpus and pursued a very flexuous course to the region of the cervix. At the point of entrance into the uterine wall, the lumen of the duct dilated to form a saclike structure.

Posterior to this point, the diameter of the lumen was constant at 4 mm. The duct finally opened into the lumen of the vagina through a very small canal. There was a

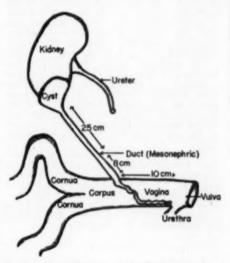


Fig. 2-Diagram of a persistent mesonephros in a pig.

small papilla on the vaginal mucosa at the point of entrance of the canal into the vagina.

Tissues for sectioning were taken from the cyst, from the origin of the duct, from the duct within the uterine wall, and from the termination of the duct. They were fixed in 10 per cent formalin, embedded in paraffin, sectioned at 5μ, and stained with Harris' hematoxylin and eosin, Heidenhain's "azan," Kornhauser's quadruple, and Masson's trichrome stains.

Some typical kidney tissue, consisting of glomeruli, convoluted tubules, and a few collecting ducts, was present in the cyst sections. The cytoplasm of these cells was very granular. The area of renal tissue was limited externally by a thin capsule-like layer of collagenous connective tissue and internally by a thick vascular layer of areolar connective tissue similar to a lamina propria. Internal to the lamina propria was a lining layer of simple, squamous epithelium

At the origin of the duct, the amount of kidney tissue present was definitely reduced; it was not as thick as elsewhere and was not present continuously around the duct. Both the external capsular layer and the lamina propria were still present. The lining epithelial layer, however, was of the transitional type. In many areas, the epithelium was lost. The lamina propria in these areas contained many infiltrating lymphocytes. The transitional character of the epithelium lining the tubule suggested that it is an excretory duct of the urinary system. No connection was demonstrated between the collecting ducts of the kidney tissue and the lumen of the cyst or tubule.

The structure of the duct within the uterine wall and also at its termination was similar to that at its origin, except that the outer capsular tissue of the wall was replaced by the characteristic tissue of the myometrium. The lamina propria and epithelial layer were present and were identical to the structures described for the tubule

From a study of the anatomic and histologic arrangement of this structure, it was concluded that it was a persistent mesonephros. The cyst had the typical location of the embryonal structure, and the presence of the duct within the uterine wall was consistent with the location in the adult of its fetal yestige, the canal of Gartner.

SUMMARY

A persistent cystic mesonephros with a patent duct discharging into the lumen of the vagina is described in a yearling Yorkshire gilt.

A cow infected with Vibrio foetus may carry her calf to term, but it is usually weak at birth and dies within a few days.

Elastration Defended

In response to the item on page 352 of the November, 1949, JOURNAL, we have the following comment:

"Dr. Mahoney's report failed to indicate the total number of lambs elastrated, the number of lambs lost, their ages, and the environmental conditions under which they were kept from the time the rings were applied until death occurred."

The correspondent calls attention to the fact that it is always important in any operation on lambs to advise the owners of farm contamination, particularly in corrals and lots where sheep have congregated for many years.

Successful veterinary medical practice should include not only good surgical procedure, he says, but also advice regarding sanitation and management factors.

[The elastrator is being widely used by sheepmen and cattlemen as a means of docking and castration. The experience reported by Dr. Mahoney emphasizes, again, that even this simplified method is not proof against infection from tetanus organisms unless the proper management and sanitation factors are also properly guarded.

—ED.]

Superfetation

Superfetation is defined by W. L. Williams in "Veterinary Obstetrics" as a phenomenon in which "a female which is definitely pregnant may again come in estrum and copulate, and a second conception occur while the uterus already contains a living fetus." Some authors, W. L. Williams among them, doubt its occurrence and have not observed it, while others differ in opinion.

During the summer of 1948, I was called to treat a Jersey cow for acute indigestion caused by engorgement with green apples. The cow was weak and unable to stand. Mineral oil was administered by stomach tube and 5,000 cc. of dextrose and saline (5 %) and 500 cc. of calcium gluconate (23 %) were administered intravenously. The following day, she was able to stand and continued to improve for several days. Before she recovered completely, she developed pneumonia with a temperature of Sodium sulfathiazole (500 cc. of 12 % solution) was administered intra-peritoneally and supportive oral administration of the drug instituted. The following day she improved and slowly regained her strength.

Before the onset of the above-mentioned conditions, the cow had been bred by acci-

dent to a Hereford bull that broke into the pasture, and had passed a normal heat period. Following the indigestion and pneumonia, the owner reported that the cow had apparently aborted because she had come back in heat and had been served by a Guernsey bull that had been purchased after her illness.

In the spring of 1949, the cow gave birth to a white-faced calf but did not come up to the owner's expectation in milk production. Several weeks later, the owner noticed another calf kicking in the cow's flank. About six weeks after the birth of the first calf, a second calf was born with Jersey or Guernsey marking and no white face. Following the birth of the second calf, the cow came up to full milk production.

Since the Hereford bull had mated with the cow first and the white-faced calf had been born first, it seemed only rational to believe that the first calf resulted from that mating. The Hereford bull was not present on the farm at the time of the mating with the Guernsey bull, and the second calf was similar to the Guernsey.

The first calf lived and was sold to another farm to be raised for veal, but the Guernsey calf was somewhat weaker and died of the usual barnyard infections in about ten days.

If this is an occurrence of superfetation, there were debilitating conditions present that may have influenced the situation, and the phenomenon occurred under conditions which were not normal. The above information was supplied to give a general idea of the case history.

Most of the information other than the treatments for indigestion and pneumonia were given by the owner. Neighbors of the owner had gathered in to "bump" the second calf in the cow's flank and to add their own opinions. The owner said that she passed a placenta following the birth of each calf.—Thomas S. Slaughter, D. V. M., Rogersville, Tenn.

Dr. Slaughter received the following letter, in answer to an inquiry, from The Americana Institute, New York City:

DEAR DR. SLAUGHTER:

I am glad to be able to answer your question on the possibility of superfetation. I have made separate inquiry into the scientific opinion on the possibility of superfetation in both the human being and some of the more common laboratory animals. The conclusion I have found in both cases is that the possibility of superfetation is still an unsettled question.

As regards animals, though cases have been found which on close examination seem to admit of no other explanation, they may just as logically be explained on the basis of variation in time of implantation among the same set of fertilized eggs. Ovulation has been induced in pregnant animals, and estrus and copulation have occurred during pregnancy; but no one has yet demonstrated the occurrence of both ovulation and copulation in a pregnant animal.

As regards the human being, the cases which have been found that admit of the possibility of superfetation have not been subjected to proof. In order to prove such a case, certain criteria must be fulfilled, i.e., the pregnant woman must deliver two or more fetuses of widely different size, appearance, and development. If the smaller fetus is born dead, the condition of the fetus and placenta must be determined by microscopic examination. Only if this fetus and placenta appear normal and healthy can such a case be considered a superfetation. Should the smaller fetus survive birth, x-ray examination of the centers of ossification might prove valuable.

In the human being, the occurrence of superfetation seems most unlikely in view of the marked inhibition of ovulation which occurs during pregnancy. Since fertilization can occur up to three months after pregnancy—when the uterine cavity is obliterated by fusion of the membranous structures produced in the uterus during gestation, and since nidation (implantation of the fertilized ovum on the walls of the uterus) can occur for at least two months after pregnancy, the factor of superfetation rests on ovulation. All existing studies show that maturation of the ovum does take place during pregnancy, but that this terminates in degenerative changes and atresia, i.e., ovulation does not take place.

The information in this letter has been largely drawn from two sources:

Littleford, Robert A., and Helene M. Gysin: Observations on Superfetation in Mice. Anatomical Record. (August, 1944):507-513.

Studdeford, William E., M.D.: Is Superfetation Possible in the Human Being. American Journal of Obstetrics and Gynecology. 31, (May, 1936):845-855.

I hope that you will find this answer adequate, and please do not hesitate to write to us again if you have any further questions. It has been a privilege to be able to help you.

Very truly yours,

THE AMERICANA INSTITUTE
s/ Elaine Rabins

Agalactia and lodine.—The mean output of milk per day was increased 300 per cent in 20 cases of agalactia treated by oral administration of 6 drops of aqueous iodine solution (5%) twice daily for six days, according to a report in the British Medical Journal (July 26, 1948: 126-128).

Diagnosis and Surgical Treatment of Traumatic Gastritis

E. A. CHURCHILL, V.M.D.

Philadelphia, Pennsylvania

I CAN NOT announce any new means of diagnosis of traumatic gastritis or any simple treatments whereby the condition may be cured. I can only emphasize a few points which are frequently overlooked, and which carry significant value to the clinician.

I have no figures which may prove the relative importance of traumatic gastritis to other diseases of cattle. However, we all agree that the mortality of traumatic gastritis is very high when compared with other diseases of cattle seen in everyday practice. This admission on our part proves embarrassing when we also know that most fatalities need not have occurred had the diagnosis been made early in the course of the disease.

DIAGNOSIS

The diagnosis of traumatic gastritis is nearly always made with some question or doubt. Each of us will admit he could be wrong, because we remember many cases when we have been. The symptoms are so variable that no two cases will compare exactly. Therefore, I propose that the diagnosis be based on a routine and orderly plan of reasoning to be followed precisely with every suspected case.

First, traumatic gastritis must be classified according to the pathology and the corresponding symptoms which are produced by the individual case. The classification used by Udall is adequate and is as follows: group 1, acute circumscribed peritonitis; group 2, acute diffuse peritonitis; group 3, chronic peritonitis; and group 4, pericarditis. In group 4, along with pericarditis we can also include pleuritis, abscesses of the lung, and so forth, for the sake of convenience.

Group 1, Acute Circumscribed Peritonitis.—The majority of cases of traumatic gastritis initially exhibit symptoms of acute circumscribed peritonitis—mild fever, abdominal pain, reduced peristalsis, and reduced milk flow. We are all familiar with the symptoms; however, the same changes adequately describe many other

diseases or conditions, chiefly digestive disturbances. Many cases of traumatic gastritis are misdiagnosed because one or more of the symptoms, which we have come to regard as essential to the diagnosis, may be absent. Few cases present a full picture of symptomatology. There are no pathognomonic changes for this type of traumatic gastritis, even though most of us place more emphasis on certain conditions than on others. Acute circumscribed peritonitis produces changes similar to many diseases or conditions; but, as stated, that most commonly confused with traumatic gastritis is indigestion. I use the term indigestion here in the broad sense of the word-meaning atony of the rumen, atony of the intestine, gastric or intestinal flatulence, enteritis, or any one of many other more specific diagnoses which are commonly considered under the term indigestion. Most of my misdiagnosed cases of traumatic gastritis were diagnosed initially as some form of indigestion. Consequently, when making a diagnosis of indigestion in one of its variations, I try to justify my decision on the basis of known etiology, through history or observation. For example, a change in feeding practice or overeating, immediately preceding an illness, may justify a diagnosis of indigestion. But, in the absence of known etiology, we should always suspect traumatic gastritis when we see a case exhibiting digestive disturbances. Furthermore, all cases of indigestion that do not respond to treatment within a reasonable time should be suspected of having traumatic gastritis until proved otherwise.

Group 2, Acute Diffuse Peritonitis.— The second type of traumatic gastritis is the easiest type to diagnose accurately. can scarcely be confused with any other disease, if the animal is observed soon after the onset of symptoms; but a few days later, it may be confused with septicemia. All the symptoms of acute localized peritonitis are evident but are amplified greatly by the large area of involvement. this is the type of traumatic gastritis that is most frequently diagnosed early, it also follows that more of these cases are surgically treated. Unfortunately, many of these cases do not respond well to surgical treatment due to extensive peritonitis at the time of operation. However, unless it is

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Presented before the Section on Surgery and Obstetrics, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949.

evident that an animal no longer has any resistance to infection, we should always attempt removal of the foreign body. It is interesting to note that we often obtain considerable improvement in the animal by using antibiotic agents or sulfonamide drugs, or both, postoperatively, only to have the animal relapse after a week and die within a few days. This is probably a result of the collapse of the natural barriers to infection and its rapid development into a generalized septicemia.

Group 3, Chronic Peritonitis.—Chronic peritonitis is probably the most difficult of the four types to diagnose. A large percentage of these cases go undiagnosed until the animal dies of some other disease or is slaughtered for beef. Some, however, develop an acute diffuse peritonitis follow-ing shift in position of the foreign body, a penetration by the foreign body, or infection through the protective capsule of scar tissue formed at the time of the original penetration. We frequently see the animal for the first time at this stage, and such cases are indistinguishable from the primary type of acute diffuse peritonitis, excepting at the time of operation, when old adhesions are palpable, or at autopsy, when old connective tissue adhesions and fistulous tracts are readily identified in addition to acute peritonitis. Many cases of chronic peritonitis escape the attention of the veterinarian and the herdsman since symptoms are mild. There may be reduced appetite, but the animal rarely shows complete inappetence. Pain is rarely evidenced to any degree, and fever is infrequent. The only constant symptom is a reduction in milk The animal usually exhibits a few mild symptoms, makes a recovery in two or three days, with or without treatment, and the condition is rarely considered serious. These cases, as in group 1, are frequently diagnosed as digestive disturbances of some

The diagnosis of chronic peritonitis due to foreign body can only be made in well-managed herds where accurate records and good husbandry practices are maintained. Repeated attacks of so-called indigestion in the absence of good reason, or repeated periods of reduced milk flow in the absence of good cause, are the basis for diagnosis. It is obvious that accurate histories and adequate milk records are essential to diagnosis. Whenever possible, herdsmen should be alerted to watch their cattle so carefully that cases of chronic peritonitis may be diagnosed and surgically treated before a possible fatal termination.

Group 4, Pericarditis-Pleuritis.—These cases of traumatic gastritis cause little con-

cern in either diagnosis or treatment. The diagnosis can be readily established on a complete examination of the animal, and surgical treatment, while sometimes attempted, is not generally accepted as a practical procedure. Septic pericarditis, septic pleuritis, and abscesses of the lung are considered sufficient basis for the sacrifice of the animal.

LABORATORY AIDS TO DIAGNOSIS

I have purposely excluded all laboratory aids to diagnosis from the foregoing discussion so that they may be treated separately. There is no denying the value of a complete blood study on suspected cases of traumatic gastritis. Examination of the blood should be routine but, unfortunately, many veterinarians do not have facilities or inclination to perform the examination themselves.

The differential white count is the most valuable part of the blood study. With cases falling in groups 1 and 2, the response of the white cells almost always shows a neutrophilia. The total white cell count will often remain within the normal range, but a neutrophilia, found in a suspected case of traumatic gastritis, certainly strengthens the diagnosis.

In group 4, the white cell response is the greatest of all groups. The total white cell count is usually well above the normal range early in the course of the disease and, as in groups 1 and 2, a neutrophilia is characteristic. Later in the course of the disease, the total white cell count drops rapidly.

Cases of traumatic gastritis falling into group 3, do not lend themselves well to laboratory diagnosis. In most cases in my experience, there has been no diagnostic response by the blood stream to the mild pathology developed. It is unfortunate that such is the case, since it is with this type of traumatic gastritis that we need all the information we can get if we are to make a diagnosis at all.

SURGICAL PROCEDURES

The so-called rumenotomy operation is a standard surgical procedure for the treatment of traumatic gastritis. There are some variations in technique, but most of them are minor and will not be discussed here. A few important things to remember are: (1) After completing the abdominal incision, and before incising the rumen, explore the abdomen manually, particularly portions of the liver, the anterior wall of the reticulum, and the base of the rumen. This exploration helps to determine the extent of the pathologic reaction in the individual animal, and gives something concrete upon which to base a prognosis. In

cases falling into group 2 (acute diffuse peritonitis), irreparable damage may be done if great care is not exercised in making this exploration. I have seen a number of cases which might have lived had not the natural barriers to the spread of infection been broken down by rough manipulation of the tissues. Fibrin deposits and adhesions should not be disturbed when they are found on a manual exploration of the abdomen.

Another point to be emphasized is the care with which the rumen must be sutured. Poor results may be obtained if leakage results from the tearing-out of rumen sutures a day or so after the operation. Precision in suturing the rumen is more to be desired than speed, and whatever method of suturing is used to close the rumen, each suture should be deliberately placed so that the best possible results may be obtained. In certain animals, the rumen wall is more friable than in others. In such cases, an extra row of inverting sutures, while it may prolong the time of surgery, is certainly good insurance on the success of the operation.

Stainless steel wire is ideally suited to close the abdominal wall. It may be used without fear of excessive tissue reaction or of extensive wound infection. Even in cases where abscesses develop, they may be readily drained without removing the sutures and, therefore, without gaping of the wound. If the abdominal wall is sutured in layers, the wire may be buried without hesitation.

THE BERMAN LOCATOR

During and since the last war, there has been repeated mention of using some mechanical device for the diagnosis of metallic foreign bodies in cattle, similar to a simple mine detector device which was used extensively during the war. During the last stages of World War II, an instrument was manufactured to aid surgeons in locating pieces of shrapnel embedded in heavy tissue. This is the Berman locator, and operates on the same principle as a mine detector, but has the advantage of indicating the presence of magnetic metals on a dial and by a change in the pitch of sound emitted by the machine. It may be set to give a constant steady pitch when isolated from magnetic metals. When the probe of the machine is brought into the vicinity of metal, the sound emitted from the machine increases in pitch and frequency. I have used this machine on cases of traumatic gastritis and have drawn the following conclusions: Such a device is of no value in the diagnosis of traumatic gastritis since about 90 per cent of all cattle examined carry some metallic

object in the reticulum or rumen. presence of such a foreign body can be clearly demonstrated, but it cannot be determined whether the foreign body is penetrating the stomach wall, since the position of the reticulum varies on the abdominal wall according to the amount and weight of the ingesta contained. The only place where I have found the machine useful is in the actual course of the operation. After removing all palpable foreign bodies and grit from the reticulum, the probe can be introduced, in a rubber sleeve, into the reticulum to determine whether any metal remains beyond reach. Such knowledge, of course, greatly influences the prognosis of the case.

SUMMARY

In summary, I believe we must mentally classify cases of traumatic gastritis in cattle just as we do other diseases. It can be conveniently classified into four groups. In making a differential diagnosis, each type of traumatic gastritis should be considered separately. Whenever a diagnosis of indigestion is made, we should ask ourselves "why?" and if we cannot answer the question, we should not rule out traumatic gastritis too hastily. There are no short cuts to an accurate diagnosis—a thorough examination of the animal, adequate history, and laboratory procedures all playing a vital role.

Once a diagnosis has been established, we should proceed with surgery without hesitation, excepting with cases that fall into group 4. Rumenotomy is relatively simple, does not require excessive skill, and is certainly one of the most valuable surgical procedures employed on cattle.

Prevention of Icterus in Foals

The antibody-red cell phenomenon that produces fatal jaundice in some foals, previously described (Am. J. Vet. Res., 10, July, 1948:237) can be combated by the simple expedient of not allowing the foal to nurse its dam during the first thirty-six hours of life, because the foal then loses the ability to absorb antibodies from its digestive tract (The Blood-Horse, July 9, 1949).

Consequently, when tests show that a sensitized mare is going to produce a jaundiced foal, it is possible and practical to prevent the disease by removing the foal from its dam before it has a chance to nurse. The foal may be put on a nurse-mare or be hand-fed for thirty-six hours while the mare is hand-milked hourly to prevent drying up.

When illness develops, early diagnosis is essential, especially where transfusions of compatible blood are required.

CLINICAL DATA

Clinical Notes

Bacitracin was tested and found ineffective for treatment of chronic streptococcic mastitis.—G. R. Spencer, D.V.M., Wisconsin.

Pathogenic organisms were recognized in about one fourth of the milk samples from cases of clinical mastitis.—G. R. Spencer, D.V.M., Wisconsin.

Rhinitis of swine is definitely infectious and transmissible. The infectious agent is contained in the nasal exudate but not in the feces or urine.—F. W. Schofield, D.V.M.. Ontario.

Iodine, the Vital Alterative.—Albeit the coming of the sulfonamides replaced the use of iodine to a considerable extent as a local antiseptic in veterinary medicine, its increased use as an alterative in the feed of farm animals has compensated for the loss.

The cause of hyperkeratosis (x-disease) is still unknown. A recent survey failed to show any connection between insecticides, fungicides, rodenticides and the hyperkeratosis.—W. R. Pritchard, D.V.M., Wisconsin.

Insulin Shock in a Mare.—Two hours after receiving an injection of 200 units of insulin, the mare was found staggering and falling down in the field. A pound of glucose in a gallon of water given with a stomach tube brought about complete recovery in twenty minutes.—From the Irish Veterinary Journal, July-August, 1949.

In baby pigs, hypoglycemia, uremia, and toxemia are indications of abnormally low food intake, rather than of disease per se.—Doris E. Bunnell, M.S., Indiana.

Enterotoxemia or pulpy kidney disease is caused by growth of the organism Clostridium perfringens type D in the digestive tract of the lamb. Bacteria grow in a favorable medium and produce a small amount of toxin but great amounts of so-called protoxin. This protoxin is not lethal, but when it is activated by minute quantities of trypsin it immediately becomes toxic and lethal.

—J. D. Ray, D.V.M., Nebraska.

Stomach worms have not been controlled in Wisconsin sheep even by the use of the best known anthelmintics.—B. B. Morgan, Ph.D. Wisconsin.

Streptomycin is now being priced in a range where the veterinarian should consider its use in urinary infections and for topical application.—J. E. Greene, D.V.M., Alahama.

Typical nuclear cataracts have been found in both eyes of purebred Jersey calves at birth. Calves so affected are not completely blind as they are able to differentiate solids from space.—J. P. W. Gilman, B.V.Sc., Ontario.

Penicillin in massive doses (nearly 12 million units in six days) is credited with promoting and hastening the recovery of a medical research worker suffering from a severe attack of psittacosis (Brit. M. J., Aug. 13, 1949).

Blue Tongue in Sheep

The virus of blue tongue in sheep was successfully cultured on embryonating chicken eggs by Alexander (Onderstepoort J., 22, Nov., 1947: 7-26). He found that the virus titer of a given emulsion is dependent on the temperature of incubation of the egg. The lower the temperature, the higher the titer. Blue tongue in sheep is manifested by hyperemia of buccal and nasal mucosa with salivation and frothing. There is slight lachrimation and watery discharge from the nostrils. There is swelling of the lips, tongue, face, and intermandibular spaces, accompanied by anorexia and sometimes acute enteritis with diarrhea. Affected sheep are lame and stiff and they lose condition. There is progressive emaciation, prostration, muscular weakness, and sometimes wry-neck lasting for three weeks or more. Mortality usually runs around 10 per cent but may be as high as 30 per cent of the flock. The financial losses, however, which result from emaciation and poor wool production are much more important than are the actual losses from

Brucellosis In Swine

L. M. HUTCHINGS, B.S., D.V.M., Ph.D.

Lafayette, Indiana

BRUCELLOSIS of swine has been recognized as a serious problem in some swine herds for many years. Like the corresponding disease of cattle and man, it has been popularly and scientifically known by many names such as abortion disease of swine, Bang's disease of swine, and contagious abortion. The word abortion is somewhat misleading, since it implies that the com-mon symptom of this disease is the premature birth of the young; hence, brucellosis of swine is the name of choice, since it indicates that the disease is caused by a member of the Brucella genus of bacteria. For the purpose of this paper, the terms brucellosis in cattle, brucellosis in swine, and brucellosis of man will be used to indicate the disease resulting from Brucella infection. Citations of the literature are omitted for the sake of brevity.

The type of disease produced by Brucella in swine is somewhat different from that produced in cattle, so direct comparisons of the disease in the two species should not be attempted. Brucella infections in swine are not always easily recognized by swine producers. This is probably due to the more insidious nature of the disease in swine as compared to brucellosis in cattle. Frequently, there is not a high percentage of observed abortions in infected swine herds. This tends to minimize the importance of brucellosis in the minds of some swine producers. The disease in hogs is frequently self-limiting, within the individual animal, to a greater degree than in cattle. Despite this self-limitation in the individual hog, evidence clearly indicates that the disease has remained in some infected herds

There are three types or species of Brucella organisms. Although Brucella abortus commonly affects cows, Brucella suis commonly affects swine, and Brucella melitensis commonly affects goats, cross infections in the various species of domestic animals do occur. It has been definitely shown that swine may harbor any of the three species

under natural conditions. Man is susceptible to all three types of Brucella; hence, swine brucellosis is important not only because of its effect on the swine industry. but also because it serves as a reservoir of infection for other domestic animals and man. In fact, epidemics of human brucellosis have occurred as the result of Br. suis gaining entrance to a raw milk supply. An infection cycle between swine, cattle, and man is of considerable importance in the epidemiology of brucellosis in man. Since brucellosis is not transmitted from man to man as a general rule, domestic animals are regarded as the chief source of human infection. Thus, the control of the disease in man is largely dependent on the control of the disease in animals. This makes the problem of control one of vital importance to the veterinary profession.

NATURAL COURSE OF BRUCELLOSIS IN SWINE

Since the natural course of brucellosis in swine seems to be rather poorly understood, a discussion of this phase might be in order. In swine, following exposure to Br. suis, the animals commonly develop a bacteremia in which the organisms may persist in the blood stream for periods varying up to sixty or ninety days. During and following the bacteremic stage, the organisms may localize in the body. points of localization are unpredictable, since Br. suis has been isolated from most, if not all, of the organs and tissues of infected swine. Br. suis is most commonly recovered from the various regional lymph nodes, spleen, uterus, testicle, accessory sex glands, bone marrow, and liver, but it may be found in the brain, spinal cord, joints, kidney, bladder, mammary tissue, and other portions of the body. This may explain the variation in symptomatology seen in swine brucellosis, because in all probability the symptoms depend considerably on the site or sites of localization of the causative agent.

The symptoms most commonly seen are abortion, temporary or permanent sterility, orchitis, lameness, posterior paralysis, and, occasionally, metritis and abscess formation of the extremities or other areas of the body.

Despite the fact that brucellosis is considered an abortifacient disease, the incidence of abortion may vary tremendously in different herds. It is extremely difficult

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to predict the number of abortions in any Brucella-infected herd. In some herds, abortions occur in as high as 50 to 80 per cent of the females; whereas in other herds, equally infected as far as the serum-agglutination test is concerned, there may be no observed abortions. The explanation for this variation is not easy, but observations have indicated that the stage of gestation at the time of exposure, the virulence of the infection, and the susceptibility of the swine may play a role in the outcome of the pregnancy. In addition to these factors, it is also possible for abortions to occur very early in gestation and thus be unobserved. Usually, the sows or gilts which abort early will be in heat in a short time and be rebred. In these cases, the owner considers that conception did not occur, but does not realize that early abortions may have been Abortion may occur at any experienced. time during pregnancy.

The manifestations of lameness, posterior paralysis, and abscess formation are probably explained by the localization of Brucella in the areas involved. Sterility in sows, gilts, and boars is common and may be the only manifestation of brucellosis. In swine herds where sterility is a problem, it is logical to rule out brucellosis before attempting treatment. In sows, the sterility may be permanent, but is more frequently of a temporary nature.

Orchitis in the boar is often seen where brucellosis exists. The orchitis is usually unilateral, rarely bilateral. Sterility may occur as a result of the orchitis. Fertility appears to be lowered, but complete sterility may not ensue.

SUSCEPTIBILITY

There seems to be little difference in the susceptibility of swine to brucellosis after reaching weaning age (8 to 12 weeks). The effects of brucellosis are usually more severe in breeding swine than in young pigs, but both age groups are susceptible. Some suckling pigs may become infected from contact with infected sows, but the majority reach weaning age as noninfected. Swine of all ages appear to be somewhat resistant, naturally, to brucellosis as indicated by the difficulties encountered in experimental production of abortions. Observations have not indicated any difference in sex susceptibility.

TRANSMISSION

Brucellosis in swine, as in other species of farm animals, is mainly spread by animal to animal contact. Spread may occur by ingestion of infected material, contact with infected discharges, through breeding. transportation, shows, sales, fairs, and probably many other ways. The boar is commonly incriminated as an important means of spread. This opinion is based on the observation that infected boars may eliminate Brucella in the semen and also that severe outbreaks of brucellosis have occurred following the introduction of an infected boar into a noninfected herd of swine. Breeding swine are most often thought of in connection with the spread of brucellosis, but one should not overlook the possibility of spread from infected pigs. Despite the fact that young pigs have fewer means than older swine for elimination of Brucella, they may spread the disease. Studies at Purdue University have shown natural transmission of the disease from weanling pigs to other swine.

DIAGNOSIS

The principal means of diagnosis of swine brucellosis is the serum-agglutination test, the same as for the diagnosis of brucellosis in cattle. In swine, it is generally accepted that the test is effective in determining the presence or absence of brucellosis in the herd, but has its limitations in detecting brucellosis in individual animals. In other words, Brucella may be isolated from some swine which do not react to the blood test. Thus, it is necessary to use the agglutination test for diagnosing the disease in the herd and base any attempts at control on entire herds or units rather than on individual swine.

Another factor in diagnosis is the interpretation of the agglutination test. It is now generally considered necessary to conduct the test in serum dilutions of 1:25, 1:50, 1:100, and above. In the interpretation of the test, judgement must be used, since in nearly any sizeable herd of swine low-titered reactions occur in the absence of infection. These same low-titered reactions occur in herds where infection is present. Thus, as a rule of thumb, serumagglutination reactions below the 1:100 dilution are not considered indicative of brucellosis unless there are definite reactors at the 1:100 dilution or higher in the herd. Here, again, caution should be used in the purchase of individual swine which exhibit a low-titered agglutination response, unless the status of the entire herd of origin is

CONTROL AND PREVENTION

There have been essentially two methods or approaches to control. The first is based on control and eradication by means of test, segregation, and delayed slaughter of infected breeding stock. The second has been the attempt to produce effective immunity by the use of strain 19 (Br. abortus), heat-killed strains of Br. suis, or modified live strains of Br. suis. Results indicate that vaccination procedures do not have sufficient merit to warrant their use. The protection produced by strain 19 has not been adequate. The modified live strains of Br. suis show more protective properties but may be a public health menace. To date, there are no effective chemotherapeutic measures that warrant recommendation.

GENERAL RECOMMENDATIONS

The need for a uniform program for swine brucellosis control must be emphasized. This program should be such that there is a possibility of nation-wide adoption. It would seem logical that such a plan could best arise from the U.S. Livestock Sanitary Association and the U.S. Bureau of Animal Industry. Acceptance by these bodies would tend to promote uniformity and acceptance by all the states, and should result in at least a measure of control.

Such a program should clearly present information concerning prevention as well as actual details of control. The pitfalls and failures should be dealt with, as well as the reasons for each step in the plan. It has been our experience that owners will coöperate in any disease-control plan, provided they are made aware of the reasons behind the proposals. Hence, much effort should be made to educate the owners and swine handlers. Such efforts might well be incorporated in existing agencies like the Agricultural Extension Service, County Agent System, and state and federal health agencies. In fact, all agencies which influence the thinking of farmers should be brought into a cooperative educational program. It would seem necessary to incorporate in the educational program both swine and bovine brucellosis control despite dif-ferences in procedure. In other words, we must face the fact that brucellosis eradication is our ultimate objective, irrespective of the species involved.

SPECIFIC RECOMMENDATIONS

Prevention.—The most important preventive measure is to prevent the introduction of infected swine into a brucellosisfree herd. This is best accomplished by purchasing replacements or additions from herds known to be free of brucellosis. In the event such is not possible, each addition should be tested, and no animal showing an agglutination reaction in any degree should be accepted; replacements from herds of unknown history should be kept in isolation

for at least three months and retested before entry into clean herds is permitted. The practice of assembling a swine herd from many different sources is dangerous. It is safer to purchase fewer animals from one source, if possible, and thus lessen the chances of purchasing an infected hog which does not react to the agglutination test. Herd sires should be purchased well in advance of breeding time in order that at least two bloods tests can be made on the boar prior to his use.

Community boars are not conducive to brucellosis control. The practice of loaning boars to a neighboring herd should be discouraged, because of the danger of infection being spread both ways.

Show swine may spread or contract brucellosis while at fairs and shows. Such swine should be held in isolation upon their return before entering the main herd.

Owners of purebred herds should be encouraged to sell breeding stock only from herds completely free of brucellosis as evidenced by entire herd tests. It is known that negative reacting groups of breeding swine from infected herds have been offered for sale. These animals may spread brucellosis although they are negative to the blood test at the time they are offered for sale.

Control Procedures.—Since neither test and immediate slaughter of reactors nor vaccination has been satisfactory in the control of swine brucellosis, the following two plans of control are presented for consideration:

Plan 1.—Sale of entire herd for slaughter. This plan is useful in herds, large or small, where the primary consideration is the production of pork. It is quick, easy, and economical. An interval of three to six months may be necessary to dispose of the entire herd (feeder pigs and all) and to clean and disinfect the premises and equipment. Replacement of the infected herd should be from herds free from infection. Periodic blood tests should be conducted on the newly purchased herd as a means of detecting infection that might be resident about the premises. Brucellosis is primarily an animal-to-animal contact disease: hence early detection of animals that may become infected from the premises is essential to protect the entire replacement herd.

Plan 2.—Test, segregation, and delayed slaughter of infected herd. The details of this plan are:

Blood test the entire breeding herd.

 If infection is present, consider the entire herd as infected, rather than remove the positively reacting animals. Manage the herd as a unit. 3) Raise pigs from this infected unit. Wean and test the pigs at 8 weeks of age. Isolate the negative pigs on clean premises as far removed as possible from the infected parent herd. Maintain this isolation until it is possible to dispose of the infected parent herd.

4) Blood test the pigs up to, and during, the first pregnancy. Remove all reactors as they occur. Breed only those gilts which are negative to the blood test to noninfected

boars.

5) Dispose of the original infected herd as soon as suitable negative replacements are available, or as soon as it is obvious that the plan is giving satisfactory results.

6) Premises where the infected herd was kept should be cleaned and disinfected thoroughly prior to admission of the clean

replacement herd.

This plan provides for the raising of negative pigs from the infected parent breeding stock in such a manner that clean replacements of known blood lines are available. Ultimate disposal for slaughter of the original infected herd is necessary, but is delayed until the quality, quantity, and the disease status of the pigs is known. This plan avoids the necessity of purchasing replacements from unknown sources and also aids the breeder in maintaining desirable blood lines.

Plan 2 has been used under experimental field conditions and has worked. It is the method of choice for purebred herds or in herds where improved blood lines have been developed, even if the ultimate objective of the owner is pork production rather than

the sale of breeding stock.

The time of disposition of the infected herd will depend upon whether the "one-litter" or "two-litter" system is employed. Naturally the two-litter system will be more difficult, since numbers of swine alone will tend to complicate control. A decrease in numbers of breeding swine is advisable in plan 2. In either the one- or two-litter system, it is necessary to maintain complete, permanent segregation of the infected parent swine from the weaned and tested offspring.

Plan 2 does not necessitate complete cessation of swine production at any time during the operation of the plan, but the chances of success are enhanced if the size of the herd is reduced during the period of

segregation.

A fertile soil makes a prosperous people. A poor soil makes a poor people. As long as our agriculture is healthy, our people and farm animals are healthy.

Feline Dentistry

Cats which live easy lives are likely to be victims of tartar incrustation with attendant pyorrhea and eventual loss of teeth. The cat's teeth must, therefore, be cleaned at regular intervals, in some cases as often as two or three times a year. This is a simple procedure, done under anesthesia. In cats more than 3 or 4 years old, it may be necessary to extract one or more teeth at nearly every cleaning.

Some cats develop chronic gingivitis independent of tartar incrustation and characterized by a pinkish red margin of the gum at the tooth line. Many cases resist usual treatments, but others respond to mechanical cleaning of the mouth, teeth, and gums with a mild antiseptic, such as ST-37 or hydrogen peroxide, together with a varied diet, especially one containing fresh or uncooked foods. Extraction is the

answer to resistant cases.

In extractions, too much forceps pressure is apt to shatter the tooth. A separator should be used to loosen the tissues surrounding the tooth before extraction is attempted, except where pyorrhea already has loosened it. An elevator also is helpful, in conjunction with the separator, especially in extracting molars and premolars. Careful use of this instrument to raise the tooth from the jaw often makes it unnecessary to use forceps.

Marked improvement in general health, with probable extension of life, has been noted in many cats having all of their teeth extracted. They are much better off without teeth than to have their bodies constantly absorbing the toxic products of chronic infection, as is the case in extensive pyornea. Numerous cases of chronic gastritis, nephritis, and other debilitating conditions are traceable wholly or partly to infections of the mouth.—W. A. Young, D.V.M., The Ohio State University Conference for Veterinarians, June 15-17, 1949.

Investigators of the U. S. Public Health Service report (Science, Aug. 5, 1949) that they have isolated the virus of eastern equine encephalomyelitis from wild mosquitoes (Mansonia perturbans) in Georgia. Because this species is a persistent feeder on warm-blooded animals, including horses and chickens, it is regarded as a potentially dangerous vector of equine encephalomyelitis.

The veterinarian may often serve as the key person in diagnosis or epidemiological investigation of human disease of animal origin.—L. R. Davenport, D.V.M., Illinois.

Tularemia in Sheep

F. X. McARTHUR, D.V.M., and S. B. BROWN, D.V.M.

Boise, Idaho

In the latter part of April, we were called to investigate a condition which was described over long distance telephone as stiff lambs, with some deaths resulting. These lambs went into the desert April 15 and had been there about two weeks when the trouble was first noticed. The flock consisted of approximately 900 ewes and lambs. The owner stated that 40 per cent of the lambs were affected, with a mortality of 25 per cent. He also said later that "the wool came in very poorly" from the lambs which recovered.

This disease is unusually important because man is susceptible to the infection. In man, Pasteurella tularensis can pierce the unbroken continuity of the skin and produce tularemia. Rubbing the eyes with soiled hands is another means of carrying the infection.

A number of sick lambs showed ears drooping, heads held down, emaciation, incoördination, and temperatures of 106 F. and higher. The lambs were heavily infested with ticks, and wherever the ticks had congregated—in the axillary space, in the flank—the skin was dark blue, discolored almost to the appearance of gangrene.

Our first provisional diagnosis was tick fever. One lamb and a number of ticks were taken to our laboratory for further observation, and confirmation of the diag-

The owner was advised to spray all of the sheep with benzene-hexachloride, and DDT. Within a few days, the sick lambs showed marked signs of recovery, and nearly all of the ticks were dead.

LABORATORY PROCEDURES

On May 1, a live 5-month-old lamb in good flesh was submitted to the laboratory because it showed wobbly gait, was somewhat stiff in the front quarters, had a temperature of 106.5 F., and was heavily infested with ticks. On postmortem examination, there was some consolidation of the lungs, slightly edematous axillary lymph

glands, and an enlarged spleen. There were no caseous foci on liver or spleen, as is commonly found in laboratory animals infected with *P. tularensis*.

Liver, spleen, and blood were streaked directly on Difco blood agar to which 10 per cent sterile human blood was added. The cultures were incubated aërobically at 37 C. for four days, at which time there was no evident growth. At the time cultures were made, 2 mice and 2 guinea piga were injected subcutaneously with tissues of the liver and spleen. Also, tests were run for prussic acid, arsenic, mercury, and lead poisoning. All were negative.

On May 9 and 10, the mice and guinea pigs died. On postmortem examination, all showed discrete yellowish white caseous foci up to 1 mm. in diameter on the liver and spleen. Upon direct staining, the spleens of mice, which were greatly enlarged, showed numerous gram-negative bacilli about 0.5 μ long, by 0.2 μ wide. A capsule was very evident when dilute carbol fuchsin was used as a stain.

Cultures of all dead laboratory animals were streaked on tryptose agar, liver agar, and cystine heart agar. To the latter two agars, 10 per cent human blood was added. Duplicate plates were set up aërobically and under 10 per cent carbon dioxide. Growth seemed to be equal on all mediums, but better growth was obtained under a tension of carbon dioxide. P. tularensis was isolated from all cultures, and our diagnosis was changed to tularemia.

Sections of guinea-pig liver and spleen were shipped in dry ice by air express to Dr. R. R. Parker, Microbioligical Institute, Rocky Mountain Laboratory, Hamilton, Mont. His report was positive for tularemia, sustaining our diagnosis.

On May 17, six blood samples from recovered lambs were submitted along with some ticks from the same animals. The ticks were ground in sterile physiologic saline solution, and injected subcutaneously into mice and guinea pigs. All animals died in three to five days, while the organisms in the original sheep viscera produced death in about ten days. P. tularensis was recovered from all laboratory animals. Agglutination test first was set up with Brucella abortus antigen on the serums from the 6 sheep, and all ran a titer of over 1:100. Then the tube agglutination test was set up with P. tularensis antigen, and the titers

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The authors thank Dr. R. R. Parker, Microbiological Institute, Rocky Mountain Laboratory, Hamilton, Mont.; and Mr. A. W. Klotz, bacteriologist, Idaho State Department of Health, Boise, for their cooperation.

ran 1:2,560; 1:640; 1:1,280; 1:1,280; 1:5,110; and 1:5,110, respectively. These serums were then checked against a number of colonies off plates which had been streaked with viscera from injected laboratory animals and strong agglutination reactions were obtained from typical colonies of tularemia. A tinge of methylene blue on a toothpick was added to the mixture to facilitate readings.

When tularemia was suspected, one of the laboratory workers who had been handling the material immediately took 1-Gm. streptomycin injections twice daily for three days. A month later, agglutination tests run on his blood were negative.

DISCUSSION

The veterinarian should regard tularemia as an infectious disease of livestock, especially sheep and other range animals. Rabbits and other rodents are numerous in most range areas and may act as reservoirs for Pasteurella tularensis. Ticks and other biting insects are prevalent in these areas and may act as vectors between the rodents. sheep, and cattle. Range animals are com-monly heavily infested with ticks, hence are quite likely to become infected. Livestock morbidity and mortality can be a serious financial burden among cattle and sheep producers, so the veterinarian should be on the alert to make a proper diagnosis of tularemia when it occurs. The financial loss from meat and wool production among infected, recovered animals should not be overlooked.

From the human health standpoint, the veterinarian and the farmer should be aware of the disease. When tularemia is suspected, the entire carcass should be dipped in cresol solution. The farmer exposes himself to the disease when he salvages the pelt; the veterinarian, when he performs the autopsy. An innocent bystander watching the autopsy may be infected through dust from the dead carcass.

Sheep recovering from tularemia gave a positive blood test for brucellosis. P. tularensis and B. abortus are related antigenically. There is a possibility that tularemia-infected ewes may be the cause of some aborted or dead lambs.

In this outbreak, mostly lambs were involved, and one may assume that the older animals are immune from previous exposure and recovery. In areas where sheep range, veterinary service is limited, and perhaps there are more outbreaks of the disease than is realized.

SUMMARY

Tulare nia was diagnosed in a flock of

sheep, mostly in lambs, where morbidity and mortality were higher than usual.

Ticks can act as vectors, spreading infection from rodents to sheep, sheep to sheep, and sheep to man.

Spraying sheep with benzene-hexachloride and DDT killed the ticks and seemed to cut down the incidence of the disease.

From an economic as well as a public health standpoint, veterinarians should be on the alert in regarding tularemia as an infectious disease of range animals and of man.

Dystocia and Slaughter

The May Journal (p. 307) carried an item by Dr. F. B. Young which included the following statement: "Small, short-bodied sows, presenting large fetuses, should be operated on at once if surroundings are suitable for clean operating; otherwise they should be butchered. In my opinion, the meat is wholesome and the salvage obtained by butchering the sow is worthwhile."

Dr. D. F. McCarthy, Robertson, Mo., calls attention to section 11.28 of the BAI meat inspection regulations, which reads: "Carcasses of animals in advanced stages of pregnancy (showing signs of parturition), also carcasses of animals which have within ten days given birth to young and in which there is no evidence of septic infection, may be passed for cooking and handled as provided in part 15 of this subchapter: Otherwise they shall be condemned. (Part 16 pertains to rendering carcasses and parts into lard, rendered pork fat, tallow, and other cooking.) The words 'cooking' and 'sterilization' are used synonymously."

It would seem, therefore, that unless facilities were available for cooking or sterilization, the carcasses referred to by Dr. Young would not meet BAI Meat Inspection regulations.

Clinical and bacteriologic methods are used to classify nonpregnant mares as normal, infected, or pathologically diseased. Frequently, rest from breeding is more effective than treatment with antibiotics and bactericidal agents in restoring breeding efficiency.—Dimock and Bruner in North Am. Vet., July, 1949.

Uranium investigations in Argentina revealed that the bones of cattle contained this metal, as did various plants. Certain plants had appreciable amounts, notwithstanding that they were grown on soils containing only infinitesimal quantities.—Nuclear Sci. Abstr., July 30, 1949.

Some Aspects of Canine Ophthalmology

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Mishawaka, Indiana

WHEN FIRST considering any diseased or surgical condition of the eye, anatomic structure should be firmly fixed in mind. While a thorough knowledge is desirable, including embryology, in order to understand any condition that may be presented, it is not absolutely essential or practical in a diversified small animal practice.

The routine examination of the patient's eyes, when presented, follows this procedure. In the event of a suppurative process, first cleanse the eye thoroughly, then instill a few drops of 2 per cent butyn, wait for its anesthetic effect, and proceed to grasp the membrana nictitans and look under it for foreign bodies, follicles, and inflammation. This initial step in the ex-

amination is important.

Having completed this, examine the animal's eyes in a dark, or darkened, room with the aid of either the Bebe or binocular loupe and a pen light. A splendid view of the fibrous tunic (including the cornea, sclera, and conjunctiva) may be obtained in this manner. The iris and lens, too, may be examined by this means. When a further observation into the eye is indicated, the ophthalmoscope is used, provided, of course, that the cornea is not so clouded as to prohibit its use. A further evaluation of the use of the ophthalmoscope at this time, however, is not important to the discussion to follow.

KERATITIS

Of the different types of keratitis, the most difficult for us to cope with has been the parenchymatous or interstitial type. It is characterized by a diffuse infiltration of the sclera and cornea. Ulceration of the cornea is rare, but the condition is nearly always associated with a uveitis.

After the initial irritative symptoms, one or more hazy patches appear in the cornea. If they commence near the margin, they migrate toward the center; if at the center, others appear and fuse, until finally the whole cornea looks lusterless and dull. In a short time, the whole cornea is hazy, with a steamy surface, having a general appearance like that of ground glass.

It is difficult, at this stage, to distinguish the inner structures of the eye with the ophthalmoscope. However, with the aid of this instrument, or the binocular loupe, a closer examination of the cornea discloses the beginning of a vascularization consisting of bundles of brushlike vessels radiating more or less evenly from the periphery to the center. One theory is that vascularization appears to supply protective substances which cannot reach the cornea by the normal process of diffusion.

Recently, an excellent paper was published in Archives of Ophthalmology* involving an extensive study of experimental and naturally occurring cases of vascularization of the cornea. This study proves that the phenomena occur in a pattern of re-

markable regularity.

The first change observable in the vessels is a local engorgement of the capillaries and venules. This increases until the lumens of the venules are three to four times their original size. With this increase in size, there are characteristic protuberances, or saccular aneurysms, of the walls of the venules and of the capillaries. The engorgement and protuberances increase until, on the fourth day, there occurs a dramatic change in events. The aneurysms burst and disappear and the adjacent corneal tissue then contains many tiny spicule-like masses of hemorrhage radiating out from the former sites of the aneurysms.

The normal cornea is maintained in an extraordinarily compact state by means of potent osmotic forces and swelling of the cornea allows the tissue spaces to enlarge. Then, of course, when the cornea is swollen, there is less support for the blood vessel

wall

The thesis is therefore offered that the events in new vessel formation in the cornea are initiated by reduction in the compactness of the surrounding corneal stroma.

Objective symptoms of keratitis include photophobia, pain, and suppuration. In young dogs, both eyes are usually affected, while in aged ones, the condition may be unilateral.

Although a few cases will respond fairly well after extensive and varied treatment,

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^eCogan, David: Vascularization of the Cornea; Its Experimental Induction by Small Lesions and a New Theory of its Pathogenesis. Arch. Ophthal., 41, (1948):406-417.

it has been our experience that a substantial percentage will invariably progress into that sequel known as pigmentary keratitis (keratitis pigmentosa). In many instances, total blindness is the end result.

We have used x-ray irradiation therapy in more than 30 cases of interstitial and pigmentary keratitis with gratifying results. Each treatment consists of the administration of 140 R units. This is repeated at four-day intervals for three to five treatments, four usually sufficing. The owner or an assistant, properly protected with lead gloves and apron, can, in most instances, satisfactorily restrain the animal during the therapy. Other methods of restraint, including anesthesia, have occasionally been found necessary. One eye is shielded with lead until the other has been treated. If the eye spread is not too great, both may be treated at the same time.

An analysis of case reports to date culminates in the following conclusions:

1) Those cases of chronic pigmentary keratitis with suppuration, in which every type of medication had been employed, seemed to respond the most dramatically. In nearly every instance, the suppurative process was checked within three treatments, the spread of pigment was arrested in every instance, and in several cases was dissipated entirely. In others, there was a partial dissipation of pigment.

2) A permanent cure was effected in all but 2 cases of primary interstitial keratitis within a reasonable length of time following the last treatment. In these 2 cases relapses occurred several months later and further treatment was needed. The fact must not be overlooked, however, that some cases treated would probably have responded to other forms of therapy.

3) Two angry, spreading ulcers of the cornea, accompanied by interstitial keratitis, were brought under control by x-ray after all other methods of treatment had failed.

4) Two cases which were characterized by an exuberant granulation tissue formation on the cornea, as a result of chronic interstitial keratitis, were not helped directly, but are believed to have been checked.

In addition to the x-ray therapy, we routinely dispense vitamin A and riboflavin for use at home. Other than the use of a mild eye wash for cleansing purposes, until the suppurative process has been checked, no other medication is used in the eye.

Before leaving the discussion of keratitis, I would like to elaborate on the operative procedure known as paracentesis. This procedure is indicated in certain forms of keratitis which do not respond to the usual methods, in certain types of ulcer of the cornea, and after injuries or operations where the anterior chamber has become filled with blood, or hypopyon—filled with pus. It is indicated also in glaucoma with exceedingly high tension in order to relieve the pain and to reduce the tension rapidly; it supplements the use of drugs in cases where a drug alone will not reduce the tension. Often, when the tension has once been lowered by paracentesis, it can be more readily kept low with a miotic.

Of the several methods which may be used, we prefer the keratome to a needle or a cataract knife. After making the incision at the upper limbus and draining the aqueous humor, we irrigate with a sterile penicillin-in-saline solution. A regular eye irrigator may be used or ordinary sterile glass hypodermic syringe with a blunt needle. Within a very short time, the puncture wound will seal, and fresh aqueous humor will fill the chamber. The theory is that the fresh aqueous secretion has a definite beneficial action on the diseased processes involved, through increase in antibody titer.

TRITIS

Iritis, iridocyclitis, and choroiditis may conveniently be considered together for discussion, in that whenever true iritis is presented, the other conditions accompany it. The term used for this inflammatory sequence is uveitis, meaning inflammation of the uveal tract or middle coat. However, for simplicity, the term iritis is commonly used.

We see primary iritis occasionally in practice, and it is worthy of our consideration both from the prognostic standpoint as well as the importance of being able to differentiate it from glaucoma and acute conjunctivitis. One of the simplest means of differentiation is to remember this axiom: If there is much mucopurulent secretion and the lids tend to stick together. it is probably conjunctivitis; if there is only watery secretion, the eye is painful, and the pupil very small, it is probably iritis; if the pupil is grossly dilated, it is probably glaucoma. More exact means of differential diagnosis will follow. Most cases of iritis will last from one to three or four weeks. Therefore, it is important that the condition be recognized as such, so that a proper prognosis can be given the owner. It is equally important to be able to distinguish between acute iritis and acute glaucoma because the treatment of the two conditions is diametrically opposite.

Iritis is characterized by:

- 1) Loss of the glistening appearance of the iris.
- An exudate of leucocytes into the aqueous humor.
- Loss of mobility of the iris, that is, there is no constant contraction and dilation as in the normal.
- Miosis abnormal smallness of the pupil. In glaucoma, the pupil is dilated, thus giving us a valuable differential diagnostic clue.
- 5) Lymph stasis in the cornea, better known as corneal opacity or clouding.

The causes are varied but can often be determined by careful examination of the patient for focal infections, especially the teeth, tonsils, and prostate gland; arthritic and rheumatic conditions are also causative

All ophthalmologists agree that the most important measure in the treatment of iritis is prompt dilation of the pupil. Promptness is exceedingly important as synechia form very quickly and soon become so firm that later efforts to break them up are unavailing. Atropine sulfate solution or ointment (1%) is usually tried, and if successful in producing full mydriasis is continued in sufficient amount to maintain this condition during the period of active inflammation. Atropine has value not only for the mydriasis produced, but also because it paralyzes the ciliary body and, hence, relieves ciliary spasm, an important source of pain. Keep the patient in a darkened room as much as possible. We use, in addition to the atropine, heavy and continued doses of foreign protein during the course of the disease (preferably concentrated omnadin). usually seeing the animal three times a This treatment is supplemented with vitamin A and riboflavin for whatever beneficial effect they may have. Paracentesis may be indicated, and tends to lessen the duration and severity of the disease. A last important measure is elimination or alleviation of the cause, if possible. The human ophthalmologist is now using typhoid antigen for its foreign protein effect in iritis, with very good results. We have had no experience with its use in animals.

GLAUCOMA

Glaucoma, although not common, nevertheless is not rare. We have noted, in our practice, that a substantial percentage of cases presented have been in Wire-Haired Terriers with Cockers next in number. In the human field, a recent work again substantiates the fact that heredity plays a role in the pathogenesis of glaucoma. In

51 (13.7%) of 373 unselected cases from the private practice of the author, a hereditary origin was established.

Glaucoma may be diagnosed readily by a careful examination of the eye. As stated before, the symptoms will often parallel those of iritis, except that in glaucoma the iris is well dilated. As the condition progresses, a definite bulging of the eye is evident and with practice, on palpation of the cornea with the finger tip, it will seem harder than the normal. Another test that may be used is to feather a piece of thread and rub over the cornea. In glaucoma, there will be no corneal reflex. Engorgement and injection of the blood vessels of the sclera seems also to be constant.

Only theories have been advanced as to the cause of glaucoma. In some instances, its occurrence may be due to a blockage of the canal of Schlemm (the drainage system of the eye), occasionally by displaced lens, it may be congenital, or may be secondary to another disease of the eye.

The treatment is medicinal or operative. Nonoperative treatment consists chiefly in the local use of the myotics-eserine and pilocarpine. However, they are merely palliative measures, often proving only of temporary advantage. They may be used, though, in the prodromal stage to cut short the attack, or at other times if the owner refuses surgery. Operative treatment consists of either iridectomy, removal of the lens, or enucleation of the eye. Enucleation or removal of the lens is performed as a means of preventing the spread of the condition to the other eye, and, of course, for the relief from pressure that it affords the animal. The most satisfactory procedure for us has been removal of the lens. This, of course, necessitates the charging of a higher fee for the performance of more exacting surgery than enucleation, but the cosmetic results achieved and subsequent client satisfaction makes it the procedure of choice.

DISCUSSION

ACTING CHAIRMAN ROBERTS: Are there any questions?

DR. JACK AKINS (Detroit, Mich.): I am not a veterinarian although my father is; I am a human ophthalmologist. This to me, was an interesting paper.

Personally, I believe that paracentesis in iritis is too often delayed. I think it should be done early. The next thing that was a real surprise to me was the removal of the lens not cataracted, as frequently in glaucoma. We never do that in human patients. In fact, we do not like to see the combination, but when we do, we try to treat the glaucoma and get the lens out later.

In this case, it was interesting to me to hear that you had good results by obtaining a noncataractous lens in the case of an apparently primary glaucoma.

Treatment of Canine Filariasis with Caricide, Diethylcarbamazine

CHARLES G. ZIEGLER, V.M.D.

Catonsville, Maryland

THE TREATMENT of canine filariasis has, as yet, been confined to the use of compounds containing arsenic or antimony, or the cyanine dyes. Recently, however, activity was demonstrated against Dirofilaria immitis, the dog heartworm, 1.5 Litomosaides carinti, the filarial worm in cotton rats, 1.4 and Wuchereria bancrofti, the filarial worm in man, with one of the piperazine compounds, 1-diethylcarbamyl-4-methyl-piperazine dihydrogen citrate, known as caricide.*

The preliminary laboratory studies in dogs' have shown that there is either elimi-

In only 3 dogs (20%), were worms, all living, found in the heart and pulmonary artery. In no case were living worms found in the heart alone. All animals showed marked physical improvement during the course of treatment and there were no toxic symptoms even in cases where the drug was administered three times daily for two months.

USE OF CARICIDE FOR FILARIASIS

This paper reports the clinical use of caricide for filariasis in 7 dogs.

TABLE I-Treatment of Fileriasis in Dogs with Caricide

No.	Breed	Weight (lb.)	No. days treated*		icrofilarial etreatment	examination During	474 475	treatment	Results
						treatment	days	result	
1	Whipper	17	7	Ave.	3.5/field	Maria.	23	Neg.	Clinically cured Dog racing, mo. late,—neg.
2	Beagle	20	14	Ave.	3.5/field	showed gradual of microfilaria,	21 10	Few micro filaria. Neg.	Re-treated 10 days. Clinically cured Dog bunting. Ap- prox. 4 mo. later —neg.
3	English Sector	51	21	Ave.	3.5/field	intervals	End of treat- ment.	Neg.	Normal. Approx. 3 mo. later—neg.
4	English Setter	40	21	Ave.	3.5/field	weekly in	Not checked.		By verbal report, clinically cured No cough and lively.
5	Collie	62	21	Appe	ox, 4.5/fie	ld #m	5	Neg.	Cough disappeared after 2 weeks' treatment. Clini- cally cured.
6	Labrador Retriever	37	21	Appr	ox. 3.0 fiel	8-8	10	Neg.	After 2 weeks' treatment, dog ap- parently normal.
7	English Setter	50	21	Appr	ox. 5.0/fie	Id Gimin	30	Neg.	Clinically cured. Dog hunting.

*Dosage: 10 mg. per pound of body weight, three times daily-oral administration.

nation or an immediate and rapid reduction in microfilaria and a slow lethal effect against the adult heartworms following either oral or parenteral administration. On autopsy, in the majority of dogs (60%), either no adult worms were found, or all were dead, or some were dead. In 3 dogs (20%), living worms were found only in the pulmonary artery but not in the heart.

Clinical Trials.—Most of the dogs treated were hunting breeds. They were presented for treatment with a history of tiring easily while hunting. All had chronic coughs, roughened coats, and the general condition was poor.

Diagnoses of filariasis were made by demonstrating microfilaria in the blood by microscopic examination. Six slides were examined for each test on each dog, and the degree of infection was estimated on

^{*}Reg. United States Patent office.

the basis of the average of the 6 readings. Blood samples were examined at weekly intervals during treatment, and 3 of the 7 dogs were checked approximately three and four months later.

Treatment.—Caricide was administered orally to all animals at the recommended dosage of 10 mg. per pound of body weight, repeated three times a day. One dog was treated for seven days, 1 for fourteen days, and the remainder for twenty-one days, as recommended.

Results.—Table 1 presents data on individual dogs, including treatment, microfilarial examinations, and results of treatment.

Usually, after the first week of treatment, the cough abated and there was general improvement. Before, or by the end of, the treatment period, coughs had disappeared and the dogs were apparently normal. Some owners hunted their dogs after the tenth day of treatment, but the performance of the animals was not as satisfactory as when they were inactive until clinically recovered.

All dogs treated had high initial microfilarial counts. Weekly examinations showed a gradual diminution in numbers and activity of microfilaria; in 5 dogs, microfilarial examinations were negative on tests made five to thirty days following treatment. Two of these dogs, when checked approximately three and four months later, were still negative. Dog 2, a Beagle, had been treated for fourteen days and, on examination twenty-one days following treatment, a few microfilaria were found. It was re-treated for ten days, at the end of which time the examination was negative. Dog 4 was not returned for examination, but the owner reported that the cough had disappeared and the dog was apparently normal.

All dogs vomited after the first few doses of the drug, but in no case was it necessary to discontinue treatment. It has been suggested that, if the drug is administered following a light feeding, the incidence of vomiting may be reduced.

DISCUSSION

These results following the use of caricide in the treatment of dogs infected with heartworms indicate that this drug is highly effective. All dogs treated were rapidly returned to normal performance in the field. The ease of oral administration reduces or eliminates the need for hospitalization. In all cases reported, the drug was dispensed to the owners. In my estimation, the antifilarial activity and the lack of toxic effects that have been experienced

with the use of drugs containing heavy metals makes this treatment superior to those previously used.

SUMMARY

- 1) The treatment with caricide of filaria-
- Initial microfilarial counts were high in all animals treated.
- On weekly examination during treatment, there was diminution in numbers and activity of microfilaria.
- 4) Microscopic examinations were negative in 5 dogs five to thirty days following treatment. In 1 dog, treated for fourteen days, a few microfilaria were found twenty-one days following treatment. On re-treatment for ten days, examinations were negative. One dog was not returned for check.
- 5) Three dogs, checked three to four months following treatment, were still negative.
- 6) All dogs were clinically cured and were promptly returned to hunting or racing.

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No one is in a better position to instigate proper sanitary regulations than the veterinarian. What have you done to improve the quality of the milk and/or meat supply of your community?

Every veterinarian should belong to a civic or service club. What a man is, dies with him — what he does for his community lives on forever.

munity, lives on forever.

There is a spiritual reward for the veterinarian who relieves the suffering of dumb animals. Of that, I am convinced.—
E. J. Frick, D.V.M., Kansas.

Progress in Understanding Canine Distemper and Associated Ailments

WAYNE H. RISER, D.V.M., M.S.

Skokie, Illinois

As CHAIRMAN of the Special Committee on Diseases of Small Animals, I will discuss a most serious problem that is, and has been, menacing the canine population. The subject is that confusing group of diseases known as the "distemper complex" which includes canine distemper and all of the associated encephalitides.

It is not my purpose to try to straighten out the great amount of confusion surrounding these more or less associated diseases. Instead, I will attempt to point out some of the embroiled aspects of the syndromes and then discuss with you what seem to be ways and means of obtaining additional information that will lead to

better control of these diseases.

When I started practice, the best authorities called any disease in the young dog that caused an elevation of temperature canine distemper. They thought that the disease was caused by a single virus. The great variety of symptoms and forms encountered in this condition were believed, at that time, to be the result of different forms or mutations of the specific virus; hence, the terms neurotropic, viscerotropic, and pneumotropic came into use. To these were added such terms as distemper encephalitis, post-distemper encephalitis, and distemper chorea, when nervous symptoms were seen.

DISTEMPER VACCINES

In the early 1930's, following the work of Ashe Lockhart, Carré, and Laidlaw and Dunkin, vaccines for canine distemper began to appear. When it was found that these vaccines were only partially effective, that is, in some cases they would work perfectly and produce solid immunity while in others they were ineffective, the problem began to be viewed as a complex situation. Practitioners wondered if a host of diseases were not responsible for this febrile disorder that was then being called distemper. This was further questioned in 1937, with the widespread outbreak of equine encephalomyelitis in the United States, when it was discovered that the equine encephalomyelitis virus was of at

least three different types and it was impossible to produce a polyvalent vaccine.

In the early 1930's, Green and his associates were called to the fur farms of Wisconsin for consultation regarding a neurotropic distemper-like disease found in foxes. They successfully isolated several distinct viruses and designated them as fox encephalitis or canine encephalitis, as best described the condition. Green has been quoted as saving that he found at least 4 or 5 specific viral entities capable of producing convulsions in both foxes and dogs. It was only through the use of extensive laboratory procedures that he was able to differentiate these diseases. Green was able to isolate the specific canine distemper virus, and he found that it would live and grow in other animals besides the dog and fox. By serial passage through the ferret, he could attenuate the distemper virus to such a degree that it would not produce an active disease in the dog but would give permanent immunity. Experimental data indicated that this ferret-attenuated vaccine produced solid immunity against canine distemper in all of the animals treated. However, the reports from field trials were not so good, and soon work was presented to show that the percentage of immunity produced by this vaccine was relatively the same as that produced by others, regardless of whether the simultaneous serum and virus method or a killed tissue vaccine was employed. When these results were learned, still more confusion was added to a now very controversial subject.

RELATION TO NUTRITION AND PARASITES

About that same time, the nutritionists called the small animal practitioners' attention to dietary disturbances of the dog, and warned that rations of white bread and potatoes caused fits or canine hysteria. Certain dog biscuits were shown to be capable of producing hysteria and convulsions and, for a short time at least, practitioners believed that faulty nutrition was responsible for some, if not all, of these atypical forms of the disease.

Pathologists then found that diet was not responsible for all the so-called convulsions of dogs. Parasites appeared to be a con-

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tributing factor, because it had been observed that dogs with heavy infection of coccidia and hookworms frequently developed a severe enteritis and diarrhea that terminated with convulsions.

At this point, pathologists and practitioners hoped that if there were some way to positively identify the disease, either clinically or pathologically, the problem would be simplified.

DIAGNOSIS

In 1930, Cowdry, working with yellow fever, discovered that viruses entered the cell itself and produced definite intracellular changes in a much different way than bacterial infections. In such diseases, he found that in the cell nucleus there was an immediate, sharp derangement of the nuclear parts. This was followed by the formation of a new nuclear body. Such changes were so consistent that they had diagnostic value. In other diseases, the formation of accessory bodies or inclusions took place in the cytoplasm of the cell. Canine distemper was recognized as a disease that produces cytoplasmic changes. Green found that, in the disease he called fox encephalitis, certain intranuclear inclusions were produced and he identified them with this disease.

Many veterinary diagnosticians hoped that the discovery of the cytoplasmic distemper inclusions would ease the difficulties of diagnosis and differentiate this disease from the other confusing ones. These cytoplasmic inclusions occurred in the epithelial cells of the bronchi and the urinary bladder, as well as in the cells of the kidney, occasionally. Certain investigators advocated staining scrapings from epithelial layers of these organs for diagnosis. This method was only fairly reliable. If inclusions were found, a positive diagnosis was made. However, in many cases, the cells proved to be negative for inclusions, and this left some doubt as to the correct diagnosis of the case.

The life cycle of the distemper inclusion is not yet known and, until this is fully worked out, the negative findings are not reliable. For example, in work with panleucopenia of the cat, we found that, in certain stages of the disease, the inclusions of this specific virus had entirely disappeared. Unless this fact was known, the negative diagnosis by the absence of the inclusion body would be erroneous and misleading. Considerable additional research is needed before the test for inclusion bodies can be used with any degree of accuracy.

Schlotthauer and others examined the brains of dogs dying from atypical distem-

per, in which nervous symptoms were observed. A wide variety of histologic changes were found. The cortex of the cerebrum of some cases showed little or no change that would account for the violent symptoms shown by the animal. On the other hand, some animals showing only mild symptoms presented such brain changes as pyknosis of cells, gliosis, perivascular cuffing and even abscess formation. Others also interested in pathology were unable to find any consistent lesions on examining brain tissue. We have consulted neuropathologists for an accurate interpretation of the lesions found. They have been surprised at the inconsistency of the changes seen and have been able to offer little help thus far.

In 1947, to further complicate the situation, several of us observed a peculiar yellowish liver in young dogs dying with a certain acute infection which resembled distemper. Histologic examination revealed a marked central lobular necrosis and intranuclear inclusions in many of the hepatic cells. Reports from abroad called this disease contagious canine hepatitis. A review of the literature shows that the lesion has been seen in this country for many years. Cowdry, in 1932, and DeMonbreun, in 1937, had also discovered the lesions but had termed them canine distemper. Green, too, had found the lesions in some of his experimental animals, and he thought it to be a lesion of fox encephalitis.

In all parts of the world, wherever dogs are raised, the story is about the same; the diseases are almost identical, the effects and effectiveness of canine distemper vaccine are about as good one place as another, and the mortality is similar.

RESEARCH

In order to gain further information about these diseases, Britain employed MacIntyre, Trevan, and Montgomerie to investigate every phase of this condition. They soon realized that the problem was far from simple, but their preliminary re-ports suggested progress. A veterinarian from Switzerland reviewed their work with interest and told them that she had observed that occasionally some dogs ill with distemper had hyperkeratosis of the paws and the nose. The Englishmen told her that they had not made that observation, and that it must be a characteristic of the cases seen in her country. But when they reëxamined their dogs, they found that they had overlooked this lesion in some of the animals. A certain percentage of dogs did have hyperkeratosis of the forepads and sometimes of the epithelium of the nose.

The Swiss veterinarian further observed that in postvaccination breaks, hyperkeratosis usually resulted. In these dogs, treatment was usually ineffective and the mortality was high. The virus recovered from the hyperkeratosis patients differed from the canine distemper virus in that ferrets failed to sicken when inoculated with the hyperkeratosis virus. This condition was called "hard pad disease."

Hyperkeratosis of the pads and nose had been observed frequently by American veterinarians, but these men had failed to note a connection between the incurable cases and this lesion. Most practitioners thought it was due to the dehydration, avitaminosis, and malnutrition of a stormy postdistemper convalescence.

At the National Veterinary Congress in England in 1948, MacIntyre, Trevan, and Montgomerie summarized their work with canine distemper and associated canine encephalitis. They presented a summary of the cases examined and classified them into five groups. It is doubtful whether any experienced practitioner could fully agree with their classification. However, the outline is commendable and has given practitioners and research workers new material with which to work.

Group 1 of their classification is divided into sections A and B. Section A denotes those cases which show the canine distemper virus which infects ferrets. Section B cases show the same symptoms as A, but the virus will not sicken ferrets. It is in this B section that the hard pad lesion is seen. Group 2 embraces the viruses causing a demyelinating encephalitis following a mild, catarrhal infection in dogs of all ages. In group 3, the lesions are those of perivascular lymphocytic cuffing of the vessels and sometimes monocytic infiltration of the cortex with no demyelinization or neuronal damage. In group 4 are all other encephalitides caused by bacterial invasion, and in Group 5, those of a nutritional origin which have been called canine hysteria in America.

This classification is the best that has been offered so far. However, many problems associated with these nervous disorders still remain unsolved. This work has partially clarified some of our thinking and has opened new avenues for study.

From this brief review of the situation, it can be realized that diagnosis, treatment, and control of this condition are far from solved. Many times, practitioners are unable to help dog owners in these cases. Inability to combat this problem and other unsolved situations in diseases of small animals has caused veterinarians great concern.

Very little organized research has been done on the diseases of the dog. The commercial biological companies are to be commended for their work in developing vaccines. Practically all the knowledge we have today in distemper-like diseases is the result of the private research of commercial companies. These projects have been expensive, and it is unfair to expect them to solve the entire problem.

Veterinary medical schools and veterinary science departments of land-grant colleges have been reluctant to attempt canine research because their appropriations have come from agricultural funds marked specifically for food-producing animals. Many of us are concerned over the lag in the development of disease-control measures for the pet animals. We must admit that the progress in some lines has been almost nil and it is often embarrassing to admit to clients that we are still unable to treat certain diseases.

As chairman of your Committee on Diseases of Small Animals, it is my duty to call these facts to your attention, with the hope that you may have something to offer that will stimulate greater research in canine diseases. In discussing the possibilities for research in the various veterinary departments, I find that many institutions would be happy to coöperate, if funds could be obtained to support this endeavor.

AVMA RESEARCH FUND

This has been realized for some time and it prompted the AVMA to set up a research fund four or five years ago. You will recall that the members of this Association contributed a total of \$87,000 to help with this work. This was a noble start and the contribution averaged \$10 per member. However, it should be realized that it was only a start, and we must perpetuate this fund to keep it alive and useful. Now we must raise additional funds to continue this work. Our Association has an excellent medium for selecting projects and dispersing fellowships to carry on this work. However, the funds have been too meager to support the volume of experimentation that is necessary to solve the problems we have discussed here.

May I discuss some of the possibilities of securing funds for this work? Many of us are convinced that, with the right type of leadership, a generous amount of money would be available. One has only to be reminded of the great work in research and postgraduate training being done at the Angell Memorial Animal Hospital in Boston to imagine the possibilities that could be developed in many of our large cities. For

instance, in one large city, enough animals with pathologic lesions are being destroyed each year, without benefit of autopsy, to afford enough material to write an excellent text on canine pathology—and we urgently need such a textbook. Proper guidance and leadership for the people who have financial means would contribute much to this field. There are many individuals who are willing and even anxious to contribute to worthwhile projects for the benefit of animals. It is up to us to try to encourage these philanthropists to donate in a manner that will do the most to alleviate the suffering of animals.

Briefly, let me tell you a story of how funds are sometimes wasted by well-meaning people. I know of an animal shelter which maintained an isolation ward for dogs with febrile diseases. A group of women who wanted to do something for this institution visited it and surveyed the prospects. They saw the sick dogs in the isolation ward and observed many of them suffering with diarrhea, cough, cold, and pneumonia. They then sent a generous supply of blankets to the caretaker with instructions to put them in the cages to cover the dogs at night. Those of us who have cared for dogs with dysentery know how useless is such a gift. Because of lack of information and guidance, it never occurred to these women that something really fine and useful could have been accomplished if they had invested their money in research on the prevention and eradication of the disease rather than in an impractical gift for condemned animale

Most of us know writers and journalists who regularly produce manuscripts and feature stories for the general public about canine subjects. We, as veterinarians, could give these men interesting stories on this material. The march of dimes, crippled children week, the cancer drive, and other voluntary endeavors have made the American people very conscious of what can be accomplished by donations. If lovers of pet animals could be told that the AVMA has a research fund and a responsible committee to guide the disbursement of funds, I am sure that the response would be surprisingly great. Our public relations department must tell the public about our aims.

The American Foundation for Animal Health, which is the educational and public relations organization of the Associated Serum Producers, is an example of what can be accomplished if organized effort is properly directed. A small fraction of the price of each cubic centimeter of hog cholera antiserum was set aside to finance this work. The results have meant much to the

advancement of veterinary practice in America. It has been suggested that a small fraction of the price of each dose of canine distemper vaccine could be set aside to finance research in this field. It would seem that the dog-owning public that uses these products would not object to an additional fee of a few cents added to their vaccination bill to assure them of a better product for future vaccinations.

Then, there is the matter of taxation. In many states, the license fees collected from dog owners are used in a manner which some of us would question. If we could convince the politicians that at least a portion of this fee should be used to benefit the health of the dogs, there would be ample funds for this research work. Legislators. if unwilling to give up this fee, should be persuaded to add a few additional cents to each license fee for the benefit of the animals on whom the revenue is collected. Kennel clubs, dog food manufacturers, dog equipment manufacturers, and others deriving their living from the dogs, should be made aware of the need for additional knowledge in canine disease control. If all veterinarians would lend only a half-hearted hand in this direction, and would consult with those in authority, we would have enough financial support to develop this field to the degree which it deserves.

A few weeks ago, I visited the veterinary science department of the University of Wisconsin. There, well-qualified research workers in veterinary diseases are canine conscious and they have plenty of equipment and personnel to help with this problem, but the rest of us should give them a hand in securing funds and animals for their work.

This is a big challenge, and many of us have not given it as much thought as we should. If we are to retain the respect of the pet-owning public, we must discuss it widely and take a definite stand for the betterment of canine medicine.

The assistance needed both from a research and from a financial standpoint is very great, too great for any one man to tackle. It is a job and a challenge for every veterinarian, and if we are to preserve our dignity and relieve the embarrassment now experienced when called upon to treat these diseases, we must join hands and do something about this matter. This Committee welcomes your comments, criticisms, and assistance.

Discussion

CHAIRMAN ELKO: Dr. Riser will answer questions from the floor.

DR. JEAN GOUDY (Washington, D.C.): Have

you found any virtue in chloromycetin and aureomycin in dogs that range from 4 to 7 years old, for virus disease, with temperature of 104 and 106 F.; blood picture shows normal red blood count: anorexia: some with respiratory symptoms.

count; anorexia; some with respiratory symptoms. We have used aureomycin on 2 cases at an oral dosage of 25 mg. per kilo per day. One case was a Boxer puppy with mixed infection following ear trimming. The dog had a profuse diarrhea and a hematuria which cleared up promptly with this medication.

The second case was another Boxer with a severe diarrhea, and it cleared up more promptly than by methods used previously. The dog responded within twelve to twenty-four hours.

I have found larger doses of aureomycin beneficial—25 mg. per kilo every six hours. Druggists and salesmen tell me that is an overdose, but I have had good results.

DR. RISER: The salesmen tell us to use about 25 mg, per kilo per day.

QUESTION: Have you treated meningitis or canine encephalitis with aureomycin?

DR. RISER: No, the conditions we treated were those with intestinal disturbance.

DR. GOUDY: I have had occasion to treat a Cairn Terrier, 8 months old, with what the Englishmen refer to as American hysteria. We used aureomycin, and a sedative and it has been two and one-half months since it has had a convulsion. In cases of acute vomiting, acute diarrhea, very high temperature, or dehydration, we have given chloromycetin and adrenal cortex for three or four days, and the ordinary normal serum and saline.

DR. M. L. POVAR (East Providence, R. I.): So that things do not get too optimistic about the aureomycin picture in pathology, we were urged by a physician to use some aureomycin in treating what we call characteristic distemper cases. We had absolutely no results. We run about 95 per cent incidence of encephalitis in our cases of distemper, and we had 100 per cent in 4 cases. Every dog came down with encephalitis. Aureomycin did absolutely no good.

DR. M. L. MORRIS (New Branswick, N. J.): If a well-nourished dog is immunized with vaccine, and that immunity is challenged seven to ten days following the vaccination by exposure in a distemper ward of any of our large metropolitan cities, and the dog suffers some reaction as a result of such exposure, can canine encephalitis be transmitted either experimentally or naturally to that animal at any time in its life, thereafter?

DR. RISER: Would anybody like to answer Dr. Morris' question?

DR. VICTOR CABASSO (Pearl River, N.Y.):
An observation was made by Grier in England, recently, in response to the Montgomerie paper.
Grier had a unique case of 25 puppies in the same kennel, 10 of which had had clinical distemper previously, and 15 of which were vaccinated—but only 5 with reaction and 10 without reaction.

He had an epizoötic of encephalitis or so-called hazard disease in that kennel shortly thereafter.

All 10 dogs that had previously suffered from distemper were completely resistant to the disease and did not show any sign of infection. Three of the reactors to vaccination did not develop symptoms, and all 10 of the nonreactors developed the disease. The 2 that were reactors developed only a benign type of disease.

These figures substantiate our observation that a dog that is really immune to distemper, either by a previous disease or by reaction to vaccination, will not develop encephalitis.

DR. RISER: Does anybody else have any com-

ments

DR. TAYLOR P. ROWE (Richmond, Va.): Are we to understand that there is some crossimmunization, and that after the dog has one of these diseases it then does not develop any of the others during its lifetime?

DR. RISER: Theoretically, at least, one vaccine should not be polyvalent; that is, if a dog is injected with such a vaccine, it should be immune only to canine distemper, and not these other viruses. The work of Montgomeric, et al., shows that the virus varies and that the virus of canine distemper is not that of hard pad disease. At least, their vaccine did not hold in every case. They vaccinated dogs for canine distemper but did not protect them against hard pad disease.

Research men suspect that there are different forms, strains, or mutations of canine distemper virus, or else the virus is mixed.

The best classical example of it is the equine encephalomyelitis. It was impossible to produce a polyvalent vaccine that would immunize against all three types.

Manufacturers of canine distemper vaccines, using the killed tissue vaccine, have tried to expose the dog to many varieties of virus and bacteris before they harvested the spleen to make vaccine. The idea being that the vaccine would then be specific for not only canine distemper but as many of the allied ailients as the dog had been exposed to

allied ailments as the dog had been exposed to.
DR. C. L. DAVIS (Denver, Colo.): What is the possibility of canine distemper and hard pad disease coexisting?

Recently, I had an opportunity to section 6 cases of hard pad disease, with a clinical picture of canine distemper, according to the veterinary practitioner. In 2 of the 6 cases with typical hard pad disease, I demonstrated a number of cytoplasmic inclusions in the urinary bladder, which are generally accepted as pathognomonic for canine distemper.

Is it possible that two separate diseases were present at the same time? Many cases of hard pad disease have followed vaccination for canine distemper, and the veterinarian immunizing the dog with one vaccine or another has at times tried to incriminate the particular vaccine used. I do not believe this to be the case. In recent observations, none of them experimental but on a purely histopathologic basis associated with clinical findings of the veterinarian submitting the material, of 6 cases of hard pad disease and showing clinical symptoms of distemper, 2 showed inclusion bodies.

On that basis, there is a possibility of the two

diseases coexisting.

DR. RISER: That is right, Dr. Davis. Those of us who have examined tissue have had about the same experience. In fact, I have sectioned a typical case of canine distemper that died, and found no inclusions in the epithelium of the bronchi or of the urinary bladder.

That question cannot be answered until someone works out the life cycle of the inclusion body. While working on feline panleucopenia, I sectioned 40 cats and never found an inclusion body. Enders, Hammond, and Lawrence told how easy it was to

find the inclusion bodies. They did not tell us that virologists usually do not let their experimental animals die, but destroy them when they become morbid. At that time, the virus and in-clusion bodies are still present, but the inclusions disappear after death.

DR. DAVIS: Before we learned about hard pad disease, many cases of clinical canine distemper died. I wonder how many hard pad cases had been overlooked before we read about it.

Have we started looking for hard pad in cases

that clinically resemble distemper?

How many here have seen hard DR. RISER: pad disease? Would you raise your hands? More than half of these men are finding them. It is significant, that they are looking for them.

DR. J. S. CRAWFORD (New Hyde Park, N.Y.): Until the situation clears, we should be careful about handing out a diagnosis of hard pad disease, or group 6 encephalitis. We all know of dogs that came in with clinical distemper, recovered, went home, and never came back with hard pad disease—nor with encephalitis B, C, D, or E. DR. RISER: Should we call them all canine

distemper until we know that we can get a sharp

differential diagnosis?

DR. CRAWFORD: I believe we would be much

happier.

DR. DAVIS: That would not be fair. The British workers have done a good job, and we are dealing with different entities. Some of it may be disproved, but there is pathologic evidence to substantiate the work of the British veterinarians. On that basis, we should establish a definite diagnosis.

Strongyloidiasis in the Dog

A liver and white Pointer, 3½ months old, male, was presented on Jan. 25, 1949, with an irritation and erythema of undetermined origin over the areas of skin devoid of hair or where hair was scanty. The temperature was normal and skin scrapings were negative for mites. An antihistamine preparation was dispensed along with an

anesthetic skin ointment.

The dog was returned on January 31 with a slight but persistent cough, a temperature of 103.8 F., exfoliation, loss of hair, loose bowel movement, and vomiting. During routine examination, a fecal smear was made for possible intestinal parasites and a small worm, moving rapidly with snakelike movements, was easily discernible under low power of the microscope. These worms were not found on fecal flotation using sodium nitrate. A few coccidial oöcysts were found as a result of the flota-

Treatment was instituted at once, consisting of penicillin, triple sulfonamides, vitamins orally and by injection, injectable liver and intestinal astringents, and protectives.

A specimen of the stool was sent to a veterinary parasitologist and a diagnosis was returned of the first larval stages of Strongyloides stercoralis, probably a canine subspecies, the exact classification not being agreed upon. Reference was given to an article on Strongyloides of the dog.1

While waiting for a diagnosis of the parasite, N-butyl chloride was administered with no apparent decrease in the incidence of the larvae. The dog continued to maintain a temperature between 102.2 and 103.8 F. Sulfonamides, vitamins, intestinal astringents, and enzymatic hydrolysate of yeast and meat were continued. The stool continued loose with frequent evidence of blood. The appetite was variable; dry ex-foliation of the skin was marked and a respiratory infection was evident,

Upon receipt of the diagnosis, the suggestions for treatment were instituted. The first agent used was the previously mentioned N-butyl chloride. Crystoids (caprokol, hexylresorcinol, Sharp and Dohme) was then used with no reduction in larvae demonstrated. Tetrachlorethylene was given with again no decrease in the parasite

on fecal smears.

On February 20, a course of gentian violet, administered in 1/2-gr. enteric coated tablets, was begun, giving two tablets three times a day. This medication was discontinued March 8 with no larva present on smears.

During this period, definite improvement was noted-the temperature held between 102 and 102.4 F., the cough disappeared, the appetite improved, and the stool became more solid. Vitamins, minerals, and intestinal protectives only were given during the time gentian violet was used.

Five days later, the stool became loose again and the dog was less lively. At this time, the larvae were again seen on the fecal smear. A course of phenothiazine (phenazoid, Pitman-Moore) was begun on March 15. A No. 12 gelatine capsule filled with phenazoid liquid was given orally and daily for three days.

One week later, the dog was released. The temperature was normal, the stool formed, the dog was eating well, and the coat improving daily. There were no larvae present at the time of discharge and fecal specimens since that time have all been negative.—A. G. Misener, D.V.M., and H. M. Stanton, D. V. M., Chicago, Ill.

There is universal agreement that footand-mouth disease is rare in man.

Lucker, J. T.: The Dog Strongyloides with Special Reference to Occurrence and Diagnosis of Infections with the Parasite. Vet. Med., 37, (March, 1942): 128.

The Reinsch Test—A Rapid Preliminary Method for Identification of Arsenic

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MANY deaths of farm animals from poisoning are due to the ingestion of one of the so-called "common metallic poisons." In medical toxicology, this term has been applied arbitrarily to the compounds of arsenic, antimony, bismuth, mercury, and silver. The reason for grouping the compounds of these metals in this general term is that their presence is indicated by the stain which is formed on a strip of bright copper foil when it is boiled in an acid solution containing any of these metals.

Hugo Reinsch¹ reported, in 1838, that if a polished piece of pure copper foil is boiled in a dilute hydrochloric acid (HCl) solution of the suspected material (vomitus, ingesta, feces, etc.) a shiny black deposit of copper arsenide forms on the copper in the presence of arsenic. It was later found that, under these same conditions, compounds of antimony, bismuth, mercury, and silver also produce deposits on the copper.

In spite of the fact that antimony, bismuth, and arsenic are listed above copper in the electromotive series of metals, they all replace it from solution and are deposited on the copper. This anomaly is due to the fact that the values for the electrode potentials of these metals as given in this series are only approximations; it does not mean a contradiction of the value of this generalization.

The usefulness of the Reinsch test is that it can be applied directly to the original material with reasonable expectation of success without the necessity of going through the time-consuming process of wet-ashing the organic material. The material to be tested, after having been cut into small pieces if necessary, is covered with dilute HCl in a small beaker. One or two pieces of bright copper foil are put into the beaker and the mixture is brought to a boil and boiled gently for fifteen to thirty minutes. Water is added to keep the volume of dilute HCl constant. Hydrochloric acid forms a constant boiling point mixture with water

containing 20.2 per cent of HCl. Consequently, in boiling a dilute solution, only water is lost until the concentration reaches 20.2 per cent. The volume also may be maintained constant by setting a small round-bottom flask filled with cold water on the top of the beaker to act as a reflux condenser.

A blank determination should be run in order to avoid the error of reporting arsenic present in the material tested when the stain is due to its presence as an impurity of either the copper or the HCl. This is carried out by boiling a polished piece of the copper foil in the dilute HCl for about thirty minutes. If the copper remains bright and unchanged in color, it can be concluded that the copper and the acid are sufficiently pure for the purpose of this test. It is only necessary, of course, to conduct this blank run once for each lot of reagents.

According to Bamford, the concentration of HCl which may be used is critical. If the acid is weaker than 2 per cent, the test may give negative results in the presence of some forms of arsenic, notably, the native sulfides, orpiment, and realgar. On the other hand, a concentration higher than 8 per cent might cause the loss of some arsenic due to the volatilization of arsenious chloride or arsenic trichloride (AsCl₂) which may be present. Uniform results are obtained by using 10 ml. of concentrated HCl in 90 ml. of water. Scott, however, comments that in a current of HCl gas, AsCl begins to volatilize below 108 C. and is actively volatile at 120 C. The boiling point of AsCl is 130.2 C. It is probable that the loss of arsenic at an acidity below 20.2 per cent HCl is negligible.

The usual procedure in applying this test is as follows: A weighed sample of the material to be tested (approximately 25 Gm.) is covered with dilute HCl in a small beaker (250 cc). A piece of copper foil approximately 10 by 20 mm. is cleaned by burnishing it with a piece of fine steel wool or by covering it with tap water in a small beaker, and adding concentrated nitric acid (HNO₃) cautiously until action is just started. The HNO₃ is then poured off from the copper and the piece of foil is thoroughly rinsed to remove all traces of

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acid. The Reinsch test will not function in the presence of oxidizing substances, such as HNO, nitrates, or chromates. The foil is then added to the beaker without touching the foil with the fingers, and the mixture brought just to the boil. The amount of copper arsenide deposited on

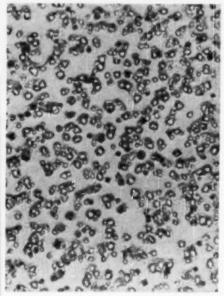


Fig. 1-The Reinsch test showing crystals of arsenic.

the strip of copper foil is inversely proportional to the area of copper presented to the solution of the unknown. If the sample being tested, such as ingesta, contains much water, care should be used in making the dilute HCl to take this water into consideration.

The copper foil should be observed from time to time during the period of boiling. This is necessary since, if the concentration of arsenic is high, the deposit of arsenic on the copper foil will scale off, leaving the copper bright. The foil may be fished out of the beaker with a glass stirring rod. A more convenient method consists of fastening a fine platinum wire to the copper foil, which makes recovery easy. Deposition of arsenic apparently is facilitated if the foil remains vertical during treatment. This can be accomplished by hooking the platinum wire over the edge of the beaker.

The formation of a stain on the copper

foil is only presumptive evidence that one of the common metallic poisons is present. Under certain conditions, when examining fecal material or decomposed organic matter, the copper may darken due to the presence of sulfides. A black or dark purple deposit on the copper may be due to the presence of antimony, bismuth, or arsenic. A silvery or gray deposit indicates the presence of either silver or mercury.

In order to confirm the presence of any of these metals, the copper foil carrying the deposit is carefully washed with tap water by repeated decantation. With proper care, the strip of copper can be made to remain at the bottom of the beaker. After washing, the piece of foil is transferred to a filter paper and carefully dried without rubbing or undue pressure. When dried, it is cut into narrow strips not more than 2 mm. wide and heated in a small ignition tube (pyrex ignition tube 10 x 125 These tubes must be thoroughly mm.). dried before heating. Leffmann and Trumper' recommend using an alcohol burner as the source of heat.

If arsenic is present, the copper arsenide is decomposed and the arsenic oxidized to the trioxide which sublimes and crystallizes as well-formed crystals on the colder part of the tube. Of the metals under consideration, arsenic is the only one which readily sublimes and forms bright octahedral crystals whose characteristic form is readily seen with a hand lens. Figure 1 shows the octahedral crystals of sublimed arsenic magnified 100 times. Antimony will yield, on prolonged heating, an acicular crystalline sublimate which, under certain conditions, resembles the sublimated crystals of arsenic. However, with experience there should never be any question as to the identity of the arsenic crystals.

The deposits produced on the strip of copper foil by mercury and silver are usually gray to silver in color. If the concentration is sufficiently high, mercury will produce a grayish deposit of very small droplets of the metal. Upon gentle rubbing, these droplets will coalesce and form a mirror. By following the same procedure as used for subliming arsenic, the deposit of mercury is volatilized and condenses on the cold portion of the ignition tube much farther away from the source of heat than the octahedral crystals formed by the sublimation of arsenic. Silver will neither oxidize nor sublime which, while not confirmatory, can be used as a presumptive test. Mercury will be deposited on the cold portion of the tube and may be identified with a hand lens as shiny spheres. Care should be taken not to confuse droplets of

water with mercury. A positive result in the Reinsch test for mercury does not prove that it is present in toxic form. On prolonged boiling, calomel will yield a positive reaction.

The use of the Reinsch test by the veterinary practitioner is not advocated except as an aid in diagnosis and a guide for the toxicologist. His ability to distinguish between the stain caused by arsenic and that caused by either antimony or bismuth is largely hypothetical. With the clue that one of the "common metallic poisons" is present, the work of the toxicologist in making a gravimetric determination is greatly speeded up.

It can be assumed that if a definite grayish black deposit is formed on the copper foil within fifteen minutes after boiling starts, arsenic is present and the amount is toxicologically significant. The sensitivity of the test for arsenic is variously given at values from 1:40,000 to 1:200,000. The sensitivity, however, depends on the state of valency in which the arsenic is present. If it is in the trivalent state, the sensitivity is 1:200,000 with a very short boiling time. However, if it is present as the pentoxide, the sensitivity is reduced to 1:40,000 and it requires at least fifteen minutes of boiling.

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Intravenous Sulfonamide Treatment

Reporting in Refuah Veterinarith (July, 1949), Krieger mentions that Israeli veterinarians have had good results from intravenous sulfonamide treatment, not only as recommended by American veterinarians for foot rot in cattle, but also for certain necrotic processes in the reproductive organs. The view that this line of treatment is harmless is probably correct in cases involving necrotic processes of a primary character, but where necrotic changes are accompanied by, or following on, debilitating conditions, the use of sulfonamides in the suggested dosage calls for much caution if accidents are to be avoided, the author concludes.

Newcastle Disease May Cause Human Conjunctivitis

Communications by various authors have emphasized the possibility of treating virus diseases with aureomycin. Virus pneumonia, infectious mononucleosis, infectious hepatitis, and herpes zoster are some of the diseases of viral etiology which have been reported as responding to this new antibiotic agent. For this reason, aureomycin was used when a case of conjunctivitis, presumably caused by Newcastle disease virus, was presented for treatment.

The patient was a 50-year-old poultry farmer who had an outbreak of Newcastle disease among his chickens. Two days prior to being seen by me, he had developed severe pain, burning, and redness in both eyes. They were considerably swollen in the morning and the patient had a constant desire to rub them. The system review was otherwise negative. No urethritis or arthritis had been noted. Physical examination was negative except for the eyes. Considerable injection of both the bulbar and palpebral conjunctiva was noted. was no evidence of iritis. The pupil reacted to light and the fundoscopic examination was negative. A smear taken from the secretions of the eyes revealed no organisms and numerous lymphocytes.

Antistine ophthalmic (Ciba) was first used without relief. After twenty-four hours, aureomycin ophthalmic (Lederle) was administered. Relief was almost immediate. Within twelve hours, the patient was practically asymptomatic. A neighboring poultry farmer who developed a unilateral conjunctivitis also improved in a short time following application of the preparation.

While the evidence is not conclusive, it does seem reasonable that the two cases here reported were caused by Newcastle disease virus and that the response to aureomycin of the disease in poultry should be studied.—George A. Sheehan, Jr., M.D., Red Bank, N. J.

Human and Bovine Types of Tuberculosis.—In 543 cases of pulmonary tuberculosis studied by the Medical Research Council of Ireland, none yielded bacilli of the bovine type; but in 149 nonpulmonary cases in children 5 to 9 years old, 7 were found to be due to the bovine type. Specimens from 50 cases in children under 14, examined by Mushatt, yielded 17 cases of the bovine type.—From the Irish Veterinary Journal, July-August, 1949.

Livestock and livestock products provide 70 per cent of all material which moves in traffic.

Psittacosis Infections in Feral Pigeons

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IT HAS BEEN known since Ritter's report in 1879' that parrots and other psittacine birds are the source of a human disease, psittacosis, and since 1930,2-5 that the cause of this disease is a filterable virus. Only since the reports in 1940 of Coles in South Africa^a and Pinkerton and Swank⁷ in the United States has it been known that pigeons, Columba livia, are sometimes infected with a virus of the psittacosis lymphogranuloma group. This infection was soon incrimi-nated as the source of human disease by Meyers who isolated the same virus from a flock of racing pigeons and from the lung of a human being who developed a fatal pneumonitis following exposure to these pigeons. The infection both in man and pigeons was originally called "ornithosis" to distinguish it from infection derived from psittacine birds. However, because of the multiplicity of strains of virus recovered from man and birds, and the similarity of the clinical disease in man infected from psittacine or pigeon sources, the older term psittacosis seems preferable for infections with psittacosis and psittacosislike viruses.

Several workers8-10 have studied and described the disease in loft and racing pigeons and emphasized the extent of the infections and the danger to persons in contact with these birds. Meyer¹¹ reports 110 known clinical human infections from pigeons since 1941, and no doubt many more have occurred which were unrecog-

It has also been established that the feral pigeons which frequent the city parks and streets and nest on urban buildings may be infected and be carriers of a psittacosis virus. Futhermore, human infection has been traced to these "wild" birds. 12 It is entirely possible that the droppings of these birds in our cities may be the source of many more cases than is known at the present time.

THE DISEASE IN PIGEONS

The clinical and pathologic picture of the disease in pigeons is often complicated by Salmonella infections and also by an un-

related virus causing intranuclear inclu-No typical syndrome in infected birds has been defined, but young birds are usually thin, feeble, and undersized. Diarrhea is common, and the vent feathers are matted with droppings. Adults occasionally show weakness, diarrhea or opisthotonos, and may be found dead without presenting

premonitory signs.

Pigeons dead of the disease, particularly young ones, may present on autopsy an acute or subacute inflammation of the serous membranes with a dry fibrinous ex-udate covering the pericardium and peritoneum. In older birds, and in those having a latent infection, the liver may be enlarged, congested, and with necrotic foci, and the spleen is usually enlarged and friable. Pul-monary lesions have not been noted consistently and are probably not part of the disease process in birds. Histologically, the affected serous surfaces reveal intense inflammatory infiltration with large mon-onuclear and lymphocytic cells predomi-nating. In the liver, spleen, and kidney, there is vascular congestion and the parenchymatous cells show necrotic changes. Impression smears of the exudate or spleen appropriately stained frequently show the virus particles. The virus can be readily isolated from the liver, spleen, and kidneys of infected pigeons by inoculating suspensions of the organs into white mice either intracerebrally, intraperitoneally, or intranasally. Several intracerebral mouse passages may be necessary to establish the infections. Identification of the virus is made by finding the typical clusters of elementary bodies in impression smears taken from the tissues of mice dying from the third to the eighth day after inoculation and stained by the Machiavello method. Serologic confirmation may be obtained by preparing complement-fixing antigens with these strains, preferably by growing them in the yolk sac or allantoic fluid of the developing chicken embryo, and testing with known psittacosis antiserum.13

With few exceptions, the strains of virus recovered from pigeons have been uniform and resemble psittacine strains in their morphologic and tinctorial characteristics.14 They differ in their reduced pathogenicity

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for mice when inoculated intraperitoneally, whereas psittacine strains are uniformly pathogenic by this route. Strains from both sources are pathogenic when inoculated by the intracerebral and intranasal route into mice.

TABLE 1-Recovery of Psittacosis Virus from Feral Pigeons in North American Cities

				Virus recovered from	
			No.	(%)	
Chicago*	1945	27 adult	6	22.2	
Ontario City A**	1946	9 adult	3	33.0	
Ontario City B	1946	43 adult		0	
Ontario City C	1946	94 adult	11	11.7	
Baltimoret	1945	100 adult	15	15.0	
Washington, D.C.	1916-	96 adult	0	0	
Washington, D.C.	1949	22 adult	3	13.5	
Washington, D.C.	1949	32 squab	0	0	
Birmingham, Ala.	1949	120 adult	5	4.2	

*Reported by Zichis et al.³⁰
**Reported by Labroffsky.¹⁴
†Reported by Davis and Ewing.¹³

Cross immunity studies of the pigeon and psittacine strains in mice have not greatly clarified the immunologic relationship since homologous immunity in mice following infection, though apparent, is not of a high order. 15 However, the neutralization with chicken antiserum16 suggests valid immunologic differences. Further investigation on the relationship of viruses of this group is greatly needed.

Both types of virus, in common with the related viruses causing lymphogranuloma venereum, feline pneumonitis, and mouse pneumonitis, possess a common heat-stable antigen demonstrable by the complementfixation reaction, 17 and experimental dermal hypersensitivity. 18 Though only group specific, the complement-fixation reaction has been a useful tool in the study of infection of this type in man and experimental animals.

EPIZOOTIOLOGY

At the National Institutes of Health, we have been interested in the extent of infection among the feral pigeons of our city parks and streets and the danger of this source of virus to the human population. Surveys in Chicago, 19 Ontario, 14 and in Baltimore 15 have shown that the active virus can be recovered from a significant proportion of birds trapped at random.

Following the diagnosis of 2 human cases of psittacosis in Birmingham, Ala., in the

winter of 1948-1949, presumably infected from pigeons, we undertook a survey of infection in that city in cooperation with the Jefferson County Board of Health. Adult birds were trapped in various locations about the city, bled through the sternal notch under anesthesia, and shipped to our laboratory in Bethesda. Autopsies were done and mice inoculated both intracerebrally and intraperitoneally with a suspension of the liver, spleen, and kidney of each bird. The serum was tested in the complement-fixation reaction with phenolized, allantoic fluid antigen prepared from a strain recovered from a psittacine bird.

TABLE 2—Laboratory Findings in 22 Adult Pigeons Captured in Washington, D.C., 1949

No.	Spleen size	Virus recovery	Serum titer4
W1	10 men.	_	_
W2	10 mm.	+	-
W3	12 mm.	need.	-
W4	10 mm.	+	-
W5	10 mm.	-	1:16
W6	# mm.		1:16
W7	9 mm.	-	-
W8	12 mm.	+	mm.
W9	10 mm.	960	1:16
W10	10 mm.	2000	Not sested
W11	4 mm.	=	-
W12	6 mm.	-	1:64
W13	10 mm.	-	1:64
00714	14 mm.		1:32
W15	9 mm.	1000	Table 1
W16	6 mm.	-	terms
W17	6 mm.	Mark.	-
W18	6 mm.	-	Not rested
W19	S mm.	-	-
W20	7 mm.	-	1:8
W21	4 mm.		400
W22	12 mm.	-	(MoRE)

*Complement-fixation test.

Table 1 shows that of 120 adult birds examined, 5 were found to be carriers of virus of the psittacosis group. In the complement-fixation reaction, serums from 91 of these pigeons were examined and 55 (60.4%), including those from which virus was isolated, fixed complement in the presence of psittacosis antigen. At autopsy, the birds appeared to be well developed and normal. No gross pathologic findings were evident, except that certain spleens were enlarged and tended to be somewhat friable. These were not correlated with positive serologic findings or the recovery of virus from the organs.

In Washington, D.C., we have examined pigeons of all ages, trapped at various seasons of the year, as indicated in table 1. During the first survey in 1946-1947, no virus was recovered from pigeons, but 35 per cent of the serum samples reacted positively in the complement-fixation test. In the spring of 1949, another series of birds was examined, and from 3 of 22 adult birds. active virus was recovered by both intracerebral and intraperitoneal inoculation into mice of the pooled suspension of the liver, kidney, and spleen (table 2). A total of 32 squabs, ranging in age from those recently hatched to those ready to leave the nest, were also examined by the same methods, but no virus was recovered from them. Complement-fixing antibodies were present in 5 of 27 of these squabs, however.

TABLE 3—Titers of Pigeon Serum in Complement-Fixation Test with Phenolized Allantoic Fluid Psittacosis Antigen, Lygranum, and Controls

Piccon (No.)		.F.*psitta- osis antigen		Lygranum**	Lvg anum
B41	adult	1:64 or greater	-	1:64 or greater	-
B53	adult	1:64 or greater	-	1:64 or greater	***
B67	adult	1:32	-	-	****
B109	adult	1:64 or greater	-	chain	inset
B120	adult	1:64 or greater	-	-	-
B121	adult	1:64 or greater	-	1:32	-
2497	adult	1:64 or greater	-	1:8	etente)
2498	adult	-	-	1:8	-
2679	squab 201 Gm.	1:16	-		-
2685	squah 140 Gm.	1:52	-	-	-
2686	squab 130 Gm.	1:8		1:16	-
2687	squab 69 Gm		-	1:32	-
					-
Control Serum (Guine		1:64	-	1:64	less
	-				

^{*}A.F. allantoic fluid.

Evidence has been presented that young parakeets in commercial aviaries acquire infection in the nest, probably from the adult birds, and it might be assumed that this is a general mode of transmission of the infection for all birds.11 The transovarian or congenital transmission of infection through the egg, however, remains a possibility and could explain readily the wide distribution of the virus. Experimental studies in our laboratory have shown that chicken eggs inoculated with a sublethal dose of virus during embryonic development will hatch, and virus can be recovered as long as twenty-two days from the chicks which appeared normal other-The conditions of this study did wise.20 not warrant the conclusion that congenital transmission in the chicken, a relatively resistant species, could occur; but the possibility of this mode of transmission in more susceptible species remains. During the spring of 1949, we examined a total of 70 pigeon eggs, in all developmental stages, for the presence of virus. White mice were inoculated intracerebrally with suspensions of individual embryonated eggs, and other mice were inoculated intraperitoneally with suspensions from pools of 4 eggs each in order to provide a larger inoculum. No virus was recovered from these eggs and, thus, no evidence for congenital transmission was secured at this time.

COMPLEMENT-FIXATION REACTIONS

In the past, considerable reliance has been placed on the psittacosis complement-fixation reaction with pigeon serum as an index of infection and the bulk of the evidence has supported this view.^{9,9,14} However, virus has been isolated from pigeons whose serum is negative in the complement-fixation test.⁸ Eddie and Francis²⁰ have reported that pigeon serums will fix complement in the presence of psittacosis antigen but not with antigen prepared with the virus of lymphogranuloma venereum.

Our experience with complement-fixation in pigeon serum also has shown that virus may be recovered from adult birds whose serum does not fix complement in the presence of psittacosis antigen. None of the serum of the 3 pigeons in Washington, D.C. (table 2), from which virus was recovered, was positive. This has been explained as being due to a recent infection and bleeding made prior to the development of antibodies. It may also be due to a lack of sensitivity in the technique of the test. Nevertheless, it indicates that active infection may exist in the absence of serologic evidence of infection in the routine test. and at least that the complement-fixation test as a measure of infection may be deficient in this respect.

As shown in table 3, pigeon serum which reacted positively with antigen prepared from virus recovered from a psittacine bird did not always react positively with the commerical lymphogranuloma venereum antigen (lygranum). In our experience. human psittacosis and lymphogranuloma venereum serum and experimentally infected animal serum both react in similar titer. It will also be noted from table 3 that serum from certain squabs reacted positively in the test, although virus was not recovered from them. It would appear that until further studies are available on complement-fixation reaction with pigeon serums, the actual isolation of the virus must remain the most reliable method of determining the presence of infection.

^{**}Lymphogranuloma venereum antigen.

PUBLIC HEALTH SIGNIFICANCE

The studies of various workers have shown beyond a doubt that the psittacosis virus carried by feral pigeons can be transmitted to man, probably by the droppings, and may cause disease. While human infections from feral pigeons appear to be much less frequent than from loft pigeons. they do occasionally occur. There are the possibilities also that many human infections are not diagnosed and the disease is more common than supposed. Furthermore, many diagnosed human cases of undetected origin may, in fact, arise from a casual contact with an infected feral pigeon or its droppings. While there is no evidence that pigeons have been a source of epidemic respiratory disease, there is no doubt that persons intimately exposed to loft or feral pigeons, or to their droppings, are at a definite risk of infection and should be aware of the danger.

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Canine Dermatitis Probably Due to Streptococci

A female, black Cocker Spaniel, 18 months old, was presented for examination Oct. 16, 1948, with the complaint that the animal's skin gave off a bad odor even after she was bathed. She was lethargic and her appetite was poor.

The patient, when spayed at the age of 5 months, had a very heavy, fine and silky coat. Very little attention had been paid to the dog. On May 20, 1948, her whole coat had had to be removed since it was so matted that it was impossible to comb it. On October 12, a seborrheic dermatitis was detected under her chin and on her ears. The hair in these areas when rubbed between the fingers had a greasy feeling. There were waxy incrustations on the skin. No pruritus was present. There was a putrid, rancid smell about the chin and

On October 15, she was returned. The medication previously dispensed was not used. The odor had become more objec-The hair over most of the body tionable. came out readily with little pressure and left the skin with the appearance of "chicken skin." The ears, the area around the shoulders, and the legs were made almost completely bald by removing the loose hairs. The abdomen was covered with waxy comedones which projected from the skin and could be scraped off. On the back and sides were circumscribed areas of dull, gray scales which, when removed, left sore red-dened spots. The temperature was 102.2 F. The respirations were very deep; the ribs

expanded completely on inspiration and an abdominal lift was noted on expiration. The pulse was small and irregular. There was a severe purulent conjunctivitis. Little of diagnostic value was heard on auscultation of the heart.

A poor prognosis was given and euthanasia was performed with pentobarbital sodium injected intravenously.

On postmortem examination, a great deal of subcutaneous fat was found. The only significant lesions were in the heart. In the myocardium of the right auricle was diffuse hemorrhage, and in the left auricle were silver streaks of connective tissue. The lungs were congested. The gastrointestinal tract was empty except for hair which was spread throughout.

Tissues were sent to the Army Institute of Pathology. A histologic examination and report were made by Major T. C. Jones:

Skin.—In several sections there is hyperkeratosis both of skin and follicles and in some areas a moderate parakeratosis. In the keratotic areas coccoid, gram-positive organisms which occur singly and in short*chains are present. These are seen in the follicles and in the hyperkeratotic areas of the stratum corneum. Lymphocytes are quite numerous in the dermis. In one section of the skin no lesions of significance are seen.

Heart.—In one section there is fatty change in the myocardium. Recent hemorrhage and lymphocytic infiltration and edema accompany this.

Lung.-Moderate anthracosis is present.

Tousil.—A cross section which appears to be a calcified nematode parasite is seen in one section. Three others show no lesions.

Liver.—Small aggregates of lymphocytes are seen throughout the liver.

Gall Bladder.—The wall of the gall bladder is somewhat thickened. In the lamina propria, lymphocytes and plasma cells are quite numerous. There is also papillary infolding of the epithelium.

Spleen.—The red pulp is congested and there are some megakaryocytes present. No lesions are seen in splenic corpuscles nor in the vessels.

Duodenum, Pancreas, Jejunum, Mandibular Salivary Gland, Kidney, Mediastinal Lymph Node, Stomach, Bladder, Brain.—No lesions of significance are seen in any of these structures.

Comment.—Although the causal relationship of the streptococci in the hair follicles is not provable, it does seem possible that they have some etiologic relationship, since the organisms are found only where lesions are present. It is felt that most of the clinical symptoms could be explained on the basis of myocardial changes. The case is being indexed as dermatitis probably due to streptococci and myocarditis due to unknown cause.

SUMMARY AND DISCUSSION

In veterinary literature we find very little concerning the aforementioned skin condition. Muller and Glass1 describe a somewhat similar condition under the heading of "Seborrhea (Greasy Skin)" but do not describe the pathologic lesions. Tobias2 describes the lesions of seborrheic dermatitis as follows: "A low grade inflammatory reaction is present with hyperkeratosis, intraand intercellular edema. There is also a moderate capillary dilatation and lymphocytic cellular infiltration. The diffuse hair fall is caused by the inflammatory infiltrate which constricts the blood supply of the hair papillae." The etiology he explains as being due to a disorder of the fat metabolism. In some cases, there may be a hereditary or endocrine background. Neither author mentions the presence of bacteria or their possible significance.—Matthew A. Troy, D.V.M., Pelham, N. Y.

¹Muller, G., and Glass, A.: Diseases of the Dog and Their Treatment. Alexander Eger, Chicago. 1926.

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Digestive Juices Used for Anorexia in Cattle

Several predisposing causes contribute to anorexia. Some of the most common are septic metritis with profuse diarrhea, acetonemia, and shipping fever.

The normal digestive juices of the bovine stomach have been used to treat anorexia in cattle. Fresh stomachs have been procured from the local locker plant and from the Rath Packing Company, Waterloo, Iowa. The digestive juices have been extracted from the stomachs with the aid of a cider press.

The average stomach, depending on size, will furnish from 5 to 10 gal. of juice. This is pumped into the afflicted animal by means of a stomach tube. Most of these animals are badly dehydrated and we usually dilute the juices with 20 gal. of lukewarm water. The animals may commence eating in a few minutes after the administration of the juices or within twelve hours, depending upon the severity of the case. So far, every animal in my practice has responded to the treatment.

On April 1, 1949, I was called to see a 4-year-old Holstein-Friesian cow that had been fresh five days. She had not been eating for the last two days and was so wobbly she could hardly stand. She also was scouring profusely. The temperature was normal but the animal was badly dehy-

drated, with sunken eyes and a peculiar sweetish odor to the breath indicative of acetonemia.

The cow was given 1,000 cc. of a calcium preparation and 500 cc. of 50 per cent dextrose, intravenously; ½ oz. of tannaform and 30 gal. of water by way of the stomach tube. I also left 24 arsalix and mineral capsules and 24 vitamin capsules, one of each to be administered three times a day.

The next morning, the client procured a beef stomach and the juices were extracted and administered to the animal about 3 p.m. in 30 gal. of water by way of a stomach tube. She was too weak to stand. When the patient was visited the next morning, she had eaten a few mouthfuls of grain and the scouring had subsided. She was given 1,000 cc. of dextrose intravenously and 20 gal. of warm water by way of a stomach tube. Then the cow was turned out in the front yard where she ate grass and drank water intermittently all day. The patient made an uneventful recovery.

Case 2 was a Holstein-Friesian cow about 7 years old. I removed a badly infected placenta on April 1. On April 4, the cow had a temperature of 107 F, was badly dehydrated, weak, wobbly, and was affected with metritis. Mastitis was present in one quarter.

At intervals of four hours, 500 cc. of 50 per cent dextrose, 500 cc. of disulfalac, stronger, 900,000 units of penicillin, and 100,000 units of mastics were placed in the quarter. Thirty gallons of lukewarm water was administered to the animal. The owner was instructed to procure a bovine stom-ach. On the second trip that day, the animal was unable to stand and was given about 10 gal. of digestive juices and 1,000 cc. of 50 per cent dextrose. On April 5, the temperature was normal. The animal was recumbent but had eaten a few mouthfuls of ground feed. She got to her feet when the jugular vein was punctured to administer 500 cc. of 50 per cent dextrose, and was turned out to pasture and began eating immediately. She made an uneventful recovery with no further treatment.

Case 3 was a Holstein-Friesian cow 5 years old. The owner had diagnosed the case as "hardware." Her milk production was down and she had been a mincing eater with a full, hard, slowly moving rumen and a peculiar sweetish odor to the breath. The temperature, pulse, respiration, and stools were apparently normal. The animal was given 5 lb. of magnesium sulfate, 5 gal. of water, and 1 gal. of mineral oil by stomach tube. On April 4, the client was sure we had a case of hardware.

The cow had changed little from April 1.

The owner stated that the physic was completely ineffective. At this time, she was given 1 qt. of molasses in 10 gal. of water, and 24 arsalix and mineral capsules, 24 vitamin capsules, and 24 capsicum capsules were left with the owner, one of each to be administered three times a day. The owner was instructed to procure a fresh stomach from the local locker plant the next day. The juices were administered to the cow about 6 p.m. By the following morning, she had started to eat and made a complete recovery.

I have used this treatment on 16 other cases, all of which made uneventful recoveries and have concluded that the normal digestive juice from the bovine stomach is an unusually successful antidote, along with the symptomatic treatment, for any debilitating disease which produces anorexia in the bovine animal.

At the present time, we are experimenting with freezing the juices to see how long they will retain their potency. They decompose rapidly if left at room temperature.—H. S. Lames, D. V. M., Dysart, Jowa.

Human Rabies

Two human cases of rabies were reported in Illinois, both resulting in death. One of these was a child of 5 years, bitten on June 8, 1949, by a stray cat. The head arrived at the diagnostic laboratory so badly decomposed that laboratory tests were impossible.

The child was bitten on June 8, a physician was consulted on June 9, and antirabic vaccine therapy was instituted on June 17—nine days after exposure. Clinical symptoms of rabies were seen on June 23, fifteen days after exposure, and the child died on June 29, twenty-one days after exposure.

This report emphasizes again the importance of rabies, particularly because of the fact that the incubation period was only fifteen days in contrast to the generally accepted twenty-day tolerance, and also because of the fact that this child was exposed to an animal attack in a rural area where there had been no recent history of rabies.

—L. R. Davenport, D.V.M., Springfield, Ill.

Federal agencies have developed an insecticide spray system for planes on international flights. A heavy spraying before loading is followed by another light spraying, automatically operated by a switch at the pilot's side, after passengers have boarded. The purpose is to kill insects that may have flown into the plane during loading. The automatic system is said to cover every part of the plane.

Coccidiosis in Poultry A Review

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COCCIDIOSIS is today a much studied, widely known, and little understood disease of poultry. It is a disease which accounts for 10 per cent, or more, of the annual mortality of chickens and an unknown morbidity loss. It is a disease concerning which we are rapidly accumulating information that enables us to control or prevent infection; but information relating to the events before and after infection is woefully scanty. The former is a condition which is fortunate from the economic point of view, and this point can never be overlooked in investigations on food-producing animals, but more basic information must be brought forth for an intelligent understanding of this disease.

The history of coccidiosis may roughly be divided into three stages. The first period preceded 1929, when coccidiosis might be called a simple problem. It was a disease generally considered to be caused by one organism which killed some chicks, and thereafter was of no great importance. The monumental work of Tyzzer³⁰ ushered us into a second period. Here, the disease was finally placed on a sound etiologic basis. This work was further augmented by Johnson^{16, 38} and Tyzzer, Theiler, and Jones.³⁹ During the second period, the etiologic agents were determined. Thus, instead of one species being responsible for this disease we now recognize, since the work of Levine,18,50 eight species of avian coccidia each pursuing its own independent course.

Beginning with the work of Johnson,10 it was observed that the chicken reacted to coccidia, as to other invaders, and immunity was the result of infection. He further demonstrated that the severity of coccidiosis is chiefly dependent upon the numbers of sporulated oocvsts which the susceptible bird ingests. The studies of Fish, Patterson, Warner, " Delaplane and Stuart,6 and Bakers contributed greatly to our knowledge of the resistance of the occysts of Eimeria tenella outside of the host's body. The work of Andrews and Tsuchiya,1 in examining the chicken house and yards for occysts, clearly revealed the danger points where foci of infection might develop. Finally, the studies of Mayhew^{m, m} clearly indicated that the problem of coccidiosis is not one of mortality alone; of much greater importance is the effect of the disease on future weight

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gains, feed consumption, and egg production. These points are too frequently overlooked. Thus, during these years, the biology of the parasite received primary consideration.

The third and present stage in the history of coccidiosis was initiated by Herrick and Holmes¹¹ when they demonstrated that the addition of sulfur to the ration would prevent infection with these parasites, if it was administered continuously before ingestion of the oocysts. They ushered in a period of widespread chemotherapeutic studies of great importance which have not as yet reached their culmination. Levine demonstrated that sulfaguanidine was an effective prophylactic for the species occurring in the chicken. This compound has been widely used for this purpose. It is primarily active against the infective sporozoites, since its activity decreases rapidly after infection has occurred. Conversely, since the drug is only slightly absorbed from the digestive tract, it would seem that it could not effectively attack the tissue phases of the parasite.

TREATMENT

Horton-Smith and Taylor" reported that sulfamethazine was effective in the treatment of cecal coccidiosis as long as four days after infection. This introduced another group of compounds, which includes sulfamerazine," that differ from sulfaguanidine in being readily absorbed by the body. This group also differs in being effective against the asexual stages" and the sexual stages" in the tissues of the infected bird. These compounds, then, may be considered therapeutic agents, in that they change the course of the disease after infection has taken place. However, they cannot be considered to be practical or effective therapeutic agents in farm outbreaks of coccidiosis. Hawkins10 has used sulfamethazine and sulfamerazine, as well as their sodium salts, in natural outbreaks in farm flocks. One half of each flock was treated after a diagnosis was made, and the other half left untreated for comparison. No significant difference in mortality occurred in either group regardless of which drug was used, or whether the sodium salt was given in the water, or the relatively insoluble drug in the feed.

Thus, under average conditions, sulfamethazine and sulfamerazine have been greatly over-rated. In other words, the flock will usually recover as rapidly without the administration of these drugs. However,

with an observant poultryman, these compounds do have a place in warding off an incipient outbreak. If the drug could be administered immediately after the first evidence of cecal coccidiosis, and before the explosive outbreaks in the entire flock, treatment would be of value.

Swales" has devised a method for the control of cecal coccidiosis which should be resorted to only in special cases, and then only under competent supervision. It combines immunization and therapeutic control of the disease. He recommended that susceptible birds be placed in special pens where it is known that they will become infected. Three to four days after being placed in these pens, they are treated with sulfamerazine or sulfamethazine. This will prevent the development of symptoms and mortality or reduce it to a negligible degree, through arresting the development of the asexual stages in the tissues of the host. However, the infection has been established long enough for the immunization of the birds. and thus for their future protection without

Sulfamethazine and sulfamerazine have the disadvantage that they cannot safely be administered continuously in the ration. They should not be given for periods longer than three to five days at the concentrations usually recommended, otherwise the birds show signs of toxicity.

further medication.

Hawkins' and Delaplane, Batchelder, and Higgins' have demonstrated the value of sulfaquinoxaline in the control and treatment of cecal coccidiosis. Grumbles, Delaplane, and Higgins' have shown that the continuous administration of 0.0125 per cent of this compound in the ration will prevent the development of the disease under broiler plant conditions. Cuckler and Ott' reported that sulfaquinoxaline acts in a manner similar to that of sulfamerazine and sulfamethazine. It affects the asexual stages which microscopically appear degenerated when the birds are given 0.1 per cent in the ration. How coccidiosis is controlled when 0.0125 per cent sufaquinoxaline is continuously administered in the feed is not known. This is less than necessary to control the disease in experimental laboratory infections. However, since the compound is excreted very slowly, a continuous intake may build up effective concentrations of the drug in the

It is of interest to note that Singsen, Scott, and Matterson^m have found that sulfaquinoxaline administered at levels of 0.01 and 0.02 per cent resulted in slightly more efficient feed utilization. However, they noted a retardation of growth at the 0.03 per cent level. Delaplane and Milliff⁸ have

shown that, after eight to ten days at a level of 0.05 per cent, birds exhibit marked signs of toxicity and, if maintained on this ration, eventually die.

Besides controlling coccidiosis, sulfaquinoxaline, either directly or indirectly, affects the total mortality from disease. Thus, Jungherr and Winn's observed a mortality in 18.952 broilers of 0.06 per cent from coccidiosis, and a total mortality of 3.6 per cent in contrast to 3.7 and 7.7 per cent, respectively, in 22,650 broilers which received no medication with this drug. This may be due to a direct effect of the chemical on the etiologic agents of other infectious diseases or, more probably, through the greater resistance to disease of the coccidiosis-spared birds. In addition, they found that the medicated birds averaged 0.2 lb, heavier and had a feed efficiency of 0.1 lb. greater than those unmedicated.

In sulfaquinoxaline, we now have the most satisfactory sulfonamide for the prevention of coccidiosis in poultry. Actually, we are primarily interested in a compound which will prevent the disease and its many after-effects. In the final analysis, we are not interested in saving birds which will require more feed per pound of gain, and which will produce fewer eggs as pullets, if we can initially prevent the disease. This, sulfaquinoxaline, properly used, will do. However, this is not the end of our search for compounds to prevent this disease. Sulfaquinoxaline is still a toxic material with not as great a margin of safety as we would desire. As already noted, evidences of toxicity are observed at the 0.03 per cent level, whereas the level advocated for continuous administration is 0.0125 per cent. Great care must be exercised in mixing this compound with the feed because of the extremely small amount which is incorporated in each ton of feed. Finally, sulfaquinoxaline is still not a cheap compound. although it is more economical than others generally available at the present time.

Two other types of compounds, still in the experimental stage, are being studied by two groups of workers. Waletzky and Hughes" have introduced nitrophenide (m,m'-dinitrodiphenyldisulphide) as a suppressive agent for the control of cecal coccidiosis. They believe that concentrations of 0.01 to 0.04 per cent, administered continuously in the feed, will give satisfactory results. Johnson, Mussell, and Dietzler" have found that certain bis-phenols are also effective suppressive agents for this disease. One of the more effective is 4,4'-isopropylidene-bis (2-isopropylphenol), which is fed in the mash at a level of 0.2 per cent. The latter compounds, in addition to preventing

coccidiosis, result in a greater efficiency of feed utilization. Large scale trials with these promising compounds are necessary to

determine their practical value.

One cannot discuss the treatment of this disease without mentioning the so-called "treatments" available to the poultryman. At the present time, there is no known remedy, cure, or treatment which will change the course of the disease after symptoms have been observed. Symptoms are not noted by the average poultryman until five or six days after infection. Of all birds which live for six days after infection, 90 per cent will recover; hence, the reason for so many so-called "treatments" with their numerous testimonials from satisfied users. Pure water at this state of the disease will result in "cures."

The use of sulfaguanidine has firmly introduced the medicated feed for the control of coccidiosis. This, however, used in concentrations of 0.5 to 1.0 per cent could be effectively mixed by the poultryman. Sulfaquinoxaline, however, presents the serious problem of proper mixing. Obviously, the poultryman cannot thoroughly mix ¼ lb. of this drug into 1 ton of feed. Therefore, it becomes either the business of the feed manufacturer to mix the drug and the feed and market a medicated feed, or to supply the compound in the form of a premix. Both methods are now being used.

Whether we like the idea of medicated feed or not, we have no choice in the matter; it is here to stay. Although we may object to the adulteration of feedstuffs with medicine, we must remember that our unnatural methods of livestock and poultry production have forced us to this extreme. We certainly are not successful in raising birds and animals without disease, and with the great need for food, now and in the future, we will undoubtedly see greater concentrations of livestock, rather than less. The continuous use of phenothiazine in the salt for the control of nematode infections in sheep was the first instance toward the continuous use of medication in the livestock industry. It will not be the last.

OTHER PHASES OF COCCIDIOSIS

Further investigations on compounds to prevent this disease will continue, but what other phases of coccidiosis should be studied? Without any doubt, our present knowledge of the disease is still very fragmentary. One particular point that should be noted in the above discussion is that nothing has been mentioned about the various types of coccidiosis occurring in birds. Our knowledge of coccidiosis in chickens is largely concerned with the cecal form. More ex-

tensive investigations are required with the other forms.

The saddest and most serious gap in our knowledge of this disease is in its relation to nutrition. There is absolutely no sound information available at the present time as to the effects of nutrition in coccidiosis. Unfortunately, the same statement will apply to most of the parasitic diseases, and yet we know from limited data that diet can markedly change the course of hookworm infections in the dog, coccidiosis in the rat, malaria in birds, and several others. Probably, the greatest advances in the future study of coccidiosis will be made in the field of nutrition.

Little is known concerning the numerous factors, intrinsic and extrinsic, which influence the parasites causing coccidiosis. Only in recent years have attempts been made to breed birds which are resistant to this disease, and yet markedly resistant and susceptible strains of chickens have been developed. Would not this be a logical

method of control?

The effects of the litter on the occurrence of this disease is one of the most puzzling factors. It is common knowledge that the poultryman who often has the most trouble with this infection is the one who tries to follow the recommendations of sanitation and more sanitation which have been made by the various agricultural experiment stations. It is evident that there are degrees of cleanliness, and coccidiosis is much more serious on fresh clean litter, than on that which is old and dirty. Kennard and Chamberlain¹⁷ observed a mortality of 19 per cent from coccidiosis and other causes, during a three-year period, in 18,735 unmedicated birds, when the chicks were started on fresh clean litter frequently re-moved. This is in contrast to a mortality of 7 per cent in 7,140 birds which were started and raised on old built-up floor This work indicated that certain nutritional factors are available in the old built-up litter which acted to reduce losses from coccidiosis and other causes.

Litter moisture has long been recognized as influencing the course of this infection. The higher the moisture content the greater the losses from coccidiosis. There must also be other unrecognized litter factors influencing the course of this disease.

It has been recognized for a number of years that varying degrees of immunity are elicited by infections with this parasite. Severe infections produce greater protection than do single light infections, although multiple light infections will produce a marked resistance. What is the nature of this immunity? Is it local, or of a general

humoral and cellular character? Of more academic interest, but of equal importance, is the marked host-parasite specificity occurring in the coccidia. Why do not the coccidia of the chicken infect the turkey and other birds? And why is not the chicken infected with other avian species?

In order to understand an animal and its reactions, a knowledge of its physiologic processes is generally considered essential What is known of the physiology of the coccidia? Nothing! Here is a group of organisms which are remarkably specific as to their location in the digestive tract, but for no known reason. The coccidia have a marked rhythmicity in their life history. and one which varies in each of the species occurring in the chicken. We have no explanation for this difference. We know that the coccidia consume oxygen and produce carbon dioxide, but we know nothing else of their metabolism. The occvsts of the coccidia are remarkably resistant to unfavorable environmental conditions, and will persist outside of the host body for relatively long periods. What are the factors responsible for this resistance?

SUMMARY

Coccidiosis is a disease of great economic implications causing estimated losses of from \$20 to \$40 million a year to the poultry industry alone. It is a disease against which remarkable strides toward control have been taken in recent years. However, it is caused by a number of different organisms, about which we still know little. The purpose of this paper has, thus, been twofold: to summarize in a very general way our present knowledge, and to offer a few suggestions for future investigations.

DISCUSSION

DR. GERARD DIKMANS (Maryland): What is the name of the form you described in the lower part of the small intestine?

DR. HAWKINS: The form, which we believe to be a new species occurring in the turkey, is as yet unnamed. From the brevity of the original descriptions of the small intestinal forms. I cannot determine which form was originally described. However, the study of further material, and possibly of some of Dr. Tyzzer's work, will make this possible. The sporulation time of this new form is between twenty-four and forty-eight hours.

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Streptomycin in Infectious Sinusitis

About a month before Thanksgiving, infectious sinusitis was diagnosed in a flock of 3,000 turkeys. An isolation pen was made and about 300 of the infected birds were treated with 100 to 150 mg. of streptomycin injected into the sinus. After one treatment, 90 per cent of the birds showed improvement the third day and were completely recovered on the fifth to seventh days. All birds were leg-banded. The remaining 10 per cent were re-treated and the majority recovered.

Of the treated birds, only 2 or 3 died, while the mortality in the untreated portion

of the flock was much higher.

Ninety-five per cent of the treated birds went to the Thanksgiving market and the owner reported that very few of them dressed out below A grade. If the material was not aspirated before the streptomycin was injected, it took a day or so longer for the birds to respond, but the end result is the same either way. The advantage of aspirating the material is that it is certain that the drug is injected into the sinus if the same needle is left in. Streptomycin was injected intramuscularly in the same dose and much larger doses and did not seem to be effective. Sulfamethazine was injected into the vein and into the sinus daily for four days but was not effective. Streptomycin was then injected into the sinuses of these same birds, and they responded. The cost of treatment per bird with streptomycin was 10 to 25 cents, de-

pending on the number of sinuses infected and the dosage needed .- F. X. McArthur, D.V.M., Idaho Animal Disease Laboratory, Boise, Idaho.

Identity of Canine and Human Hemophilia.-Apparent identity of the clotting anomaly found in human hemophilia with that seen in canine cases is reported by medical researchers at the University of North Carolina (J. Exptl. Med., Aug. 1, 1949). This defect, characterized by prolonged clotting time and delayed prothrombin utilization, can be corrected by the addition of either thromboplastin or normal plasma. A source of thromboplastin is present in hemophilic blood, but deficiency or dysfunction of a plasma factor causes it to be mobilized too slowly to be of hemostatic value.

Repeated transfusions alleviate the hemorrhagic phenomena and permit growth of affected dogs to maturity. The mating of bleeder males with females heterozygous for hemophilia will permit the further study of the inheritance of the canine disease and may clarify the human disease

Reasonable Medical Fees

The Colorado State Medical Society has established a Board of Supervisors com-posed of 12 leading physicians to hear complaints from patients and doctors involving any degree of public dissatisfac-tion. In its first year, the Board heard 71 formal complaints, most of which pertained to overcharging. The results of the study by this Board show that by far the largest number of complaints arises from the fact that doctors do not explain the fees which the patient is expected or required to pay.

The Board has power to rule that patients have been overcharged and to order that the doctors refund a part of the money. It also has power to initiate investigations of its own and to prosecute charges before judicial bodies. The effect within the State of Colorado has been to lead two-thirds of Colorado's county medical societies to vote for what they regard as fair fees. These local societies then supply their members with a printed list to post in their offices and to give to patients. The Colorado plan is working so well that its influence is being felt outside the borders of that state.

The project seems worthy of consideration by a committee of veterinarians with-

in one or more states.

Application of Laboratory Results

W. N. KONDE, D.V.M.

Auburn, Alabama

FEW PRACTITIONERS realize the limitations of a laboratory report. Except for a few diagnostic tests, no definite diagnosis can be gained from a laboratory report alone. In most cases, it is wishful thinking to believe that a diagnosis can be based on such a report.

This does not mean that a laboratory is not useful. Many helpful hints can be gained from a report when the history, symptoms, and a tentative diagnosis of a disease are provided. The trend of, and body response to, the disease under consideration are two pieces of information that are useful in prognosis and both can be obtained from a study of the blood. Anemias can definitely be classified so that specific therapy can be instituted to secure the best result. Leucemias may often be diagnosed from a blood film. Blood urea nitrogen will confirm a tentative renal insufficiency and perhaps leptospirosis. Dark field examination is useful in leptospirosis. Urinalysis is essential in the correct diagnosis and therapy of urinary tract diseases.

Misuse of the laboratory can be expected when one does not have a thorough understanding of the physiologic processes that lead to change from the normal blood or urine picture. The practitioner must have enough knowledge to know which tests to order for the case before him, in order to

gain the most from a laboratory.

When the veterinarian is in doubt and expects a definite diagnosis from a laboratory examination, he will almost always be disappointed. In this case, if the laboratory does give an answer, the diagnosis was probably missed during the examination.

As you know, laboratory tests in practice fall into two general groups, hematology and urology—the study of the blood and of the urine. I am going to talk about blood examinations first. The normal range for a white blood count (w.b.c.) in dogs has been given as 545 to 27,950 per cubic millimeter. I feel that this is too wide a range. In our locality, I would consider as normal any count between 5,000 and 10,000.

HEMATOLOGY

Altogether too often a w.b.c. is the only

Presented before the Section on Small Animals, Eighty-sixth Annual Meeting, American Veterinary Medical Association, Detroit, Mich., July 11-14, 1949. test performed when seeking information regarding a disease that has an effect on the white blood cells. Actually, a w.b.c. is limited in its use in practice. It can be used to detect the presence of infection, to differentiate between viral and bacterial infections, and to discover the presence of a leucemia or metritis.

When a disease is clinically evident, but there is some doubt about the etiology, an elevated w.b.c. indicates bacterial infection, and a normal or only slightly elevated count indicates a viral infection. In cases of early distemper, the w.b.c. will usually be normal. If, as the disease progresses, the count becomes elevated, it then indicates the

presence of secondary invaders.

A w.b.c. can be used as confirmatory evidence when pyometritis is suspected. Nearly always, counts of 50,000 to 100,000 and over are seen when this condition is present. If the clinical picture is one of pyometritis and the w.b.c. is only slightly elevated, then the clinical picture should be relied upon, as occasionally the w.b.c. is not affected in pyometritis.

Normal values for the different white blood cells in a differential count are as

follows:

Cells														ŀ	26	er Cent
pmn (polym	0	r	p	h	0	n	u	C	le	a	ľ	8)			60-70
stab cells							0	6	8		*		8	*		5-8
lymphocytes		*				*	*				,				*	15-20
eosinophils					×					*			*	,		3-5
basophils			*						×							0-1
monocytes .	*		×				*			8	*		*	*	*	0-2

Any wide deviation from these norms is of diagnostic importance. The deviations of most importance in practice are: neutrophilia, lymphocytosis, eosinophilia.

In general, when the neutrophils begin to increase because of an infection, the other cells decrease in number and, at the height of the neutrophilia, may even disappear. As convalescence begins, the neutrophilia becomes less marked and the other white blood cells reappear and gradually attain normal. As these changes usually precede the clinical changes by a day or so, one can gain an idea of the trend of the disease with the use of consecutive differential counts.

An increase in the number of stab cells, the so-called shift to the left, indicates body reaction to an infection. Conversely, when the pmn's are multilobed, a shift to the right exists. This indicates that the pmn's are older than normally and that something is interfering with the production of granulocytes.

Lymphocytosis appears in infectious mononucleosis. In lymphocytic leucemia, a monotonous picture of small lymphocytes is seen in a differential count. There may or may not be an alteration of lymphocytes in a lymphosarcoma.

Eosinophilia is rarely seen in canine practice. When present, it may be due to parasitism, skin disease, foreign protein therapy, or following an allergic reaction. In parasitism, especially hookworm, the eosinophil granules often become large and decrease in number.

The differential count can be used as a basis for prognosis, as there is a definite connection between the severity of the dis-ease and the number of pmn and stab cells seen in the count. Therefore, if the stab cell percentage is 15, the infection is mild; if the percentage is 25 to 50, the infection is severe; if the percentage is over 50, the infection is marked and the condition should be regarded as grave. Usually, when the percentage of stab cells reaches 50, an appearance of the more immature granulocytes may be looked for. The greater the number of these cells, and especially if the very immature pro and blast cells are seen, the graver the prognosis. Rarely, you will find that the percentage of stab cells is greater than that of pmn. When this is observed, the prognosis is bad, and the patient rarely survives.

When the percentage of pmn is high, and the other cells counted are low, the prognosis is good. If this occurs as the result of a drop in the number of stab cells during a disease, it indicates recovery.

When the percentage of neutrophils (pmn and stab cell percentage combined) is high in a serious condition, the differential count indicates a good response. If, however, the clinical picture is grave and the percentage of neutrophils is low or unaltered from normal, the prognosis is bad, as this is a picture of an overwhelming infection. Usually, when this happens, eosinophils reappear and the number of monocytes is above normal.

A third factor to consider in evaluating a differential count is the w.b.c. When the latter count is low and the clinical condition is obviously serious, the prognosis is grave no matter what the neutrophil and stab cell percentages may be. It is possible, in acute infections that over-run the body, that the animal will die before there is any change in the w.b.c. or differential count.

Normal range for a red blood count

(r.b.c.) is 4,500,000 to 8,000,000 per cubic millimeter. Certain factors that must be taken into account when evaluating an r.b.c. are: inherent error of 10 per cent, age, diurnal variation, exercise, menstruation and pregnancy, dehydration, altitude. Allowances must be made for one or more of these when considering whether a patient is anemic.

A diagnosis of anemia is the main reason for an r.b.c. Other tests needed for the definite classification of an anemia are (1) hemoglobin (Hb.), and (2) determination of corpuscular constants.

An animal may have a normal r.b.c. and still be anemic. Usually, this anemia can be uncovered when the Hb. determination is made. However, in order to classify the anemia, it is necessary to determine the mean corpuscular volume (m.c.v.) which is the volume of the red blood cell-normal for dogs 59 to 69 cm.; the mean corpuscular hemoglobin (m.c.h.)-normal for dogs is 20 to 24 yy; and the mean corpuscular hemoglobin concentration (m.c.h.c.)—normal for dogs is 30 to 35 per cent. These three factors are the corpuscular constants and indicate how large the cell is, how much Hb. in my is contained in the red blood cell, and the percentage of concentration of Hb. in the red blood cell. With these five factors (1) r.b.c., (2) Hb., (3) m.c.v., (4) m.c.h., and (5) m.c.h.c., a definite diagnosis as to type of anemia can be made. The following examples may help to clarify the situation.

	Hypochromic microcytic	Hyperchromic macrocytic				
r.b.c.	2,500,000	2,500,000				
Hb.	8.5 Gm.	11.2 Gm.				
m.c.v.	40 си.	102 cm.				
m.c.h.	10 γγ	$32 \gamma \gamma$				
m.c.h.c.	29 per cent	10 per cent				

In the first example, hypochromic microcytic anemia, the r.b.c., Hb., m.c.v., and m.c.h. are all below normal; the m.c.h.c. is nearly normal. From the r.b.c. and Hb. determinations, alone, it can be seen that an anemia is present. However, the type can not be determined unless the corpuscular constants are figured. When this is done, it is seen that the red blood cells are smaller than normal (macrocytic), and that while weight of Hb. per individual red blood cell (m.c.h.) is below normal (hyperchromic). Therefore, this anemia is due to a lack or loss of iron and therapy should be pointed to supply iron. In the second example, hyperchromic macrocytic anemia, the r.b.c., Hb.., and m.c.h.c. are below normal, while the m.c.v. and m.c.h. are above normal. Here again, the r.b.c. and Hb. indicate an anemia

but not the type. The main diagnostic factors in this case are m.c.v. and m.c.h.c., as they show that the red blood cells are larger than normal (macrocytic), and that while the weight of Hb. per individual cell (m.c.h.) is above normal (hyperchromic), the percentage of concentration of Hb. per individual cell (m.c.h.c.) is below normal. As an increase in size of red blood cells indicates immaturity, therapy should be directed toward supplying the erythrocytematuring factor (found in liver).

It can be seen, then, that the r.b.c. and Hb. determinations alone are not enough in studying anemias. In order to treat correctly, thus getting the optimal response, and to avoid undue expense both to the veterinarian and the client, anemias must be classified by use of the corpuscular constants. Further, a definite classification may aid in discovering the underlying cause of the anemia, as different types have different causes. The following outline gives the most common causes for the different types of anemia:

A) Macrocytic hyperchromic pernicious anemia—nutrition, pregnancy, liver disease, hypothyroidism, surgery of the gastrointestinal tract, carcinoma of the gastrointestinal tract, or fish tapeworm.

B) Microcytic hypochromic anemia pregnancy, hookworm, chronic hemorrhage, or nephritic conditions.

There is one other type of anemia, the normochromic normocytic, which is seen following blood loss and under which the hemolytic anemias are classified, but this type is not common and time does not permit discussion of it here.

There are other tests which are useful in studying anemias. One of these is the reticulocyte count. Normal reticulocyte count for dogs is 0 to 2 per cent. This is used to follow therapy, to make sure that the response to the therapeutic agent is good, and to uncover normochromic normocytic anemias. As the reticulocyte count is a measurement of production of red blood cells, a rise in the count indicates an anemia even though the r.b.c. and Hb. are normal. Another commonly used test is the determination of urobilinogen. Urobilinogen is an end product of bile and, for convenience in practice, is tested in urine. It is a fairly accurate measurement of the rate of red blood cell destruction. However, use of this test is inaccurate in liver disease when urobilinogen is increased, and in stoppage of the bile duct when urobilingen is absent from the urine.

A study of the stained blood film can be used to good advantage in determining

whether regeneration of the red blood cells is normal, pathologic, or whether there is actual degeneration. The information gained can be used for evaluation of treatment and for prognosis. This can be determined by the norphology of the red blood cells seen in the film. In normal regeneration, anisocytosis, polychromasia, normoblasts, and hypochromasia should be seen. In pathologic regeneration, there will be macrocytosis (hyperchromasia), basophilic stippling, nucleated red blood cells with budded nuclei or nuclei with masses and megaloblasts. Signs of degeneration are anochromasia and poikilocytosis.

Sedimentation rate (s.r.) is a valuable prognostic agent. However, it must be interpreted with care. The s.r. increases with the severity of the disease. It also increases in severe anemias and in the presence of cancer. Normal s.r. in dogs is 1 to 10 mm. per hour. When it is over 30 mm. per hour, the disease is severe; when over 60 mm. per hour, the outcome is often fatal.

UROLOGY

Urinalysis is one of the simplest of laboratory procedures. The only training needed is in the interpretation of the sedi-

Urine should be examined as to color, clearness, odor, specific gravity, and pH. With these few tests, it is possible to discover a great deal. Chemical poisons often

TABLE I-Urinalysis Results

Urine	Patient 1	Patient 2	Patient 3
Specific gravity	1.001	1.040	1.025
pH	6.0	7.0	7.5
Odor	None	Normal	Strong
Color	Clear and light	Cloudy-yellow	Opaque-
Albamin	Negative	3+	1+
Glucose	1 +	1+	Negative
Sediment	None	2+1	4+1

*Cellular casts, renal epithelium, squamous cells, red blood cells.
Squamous cells, few casts, triple PO crystals, red and white blood cells.

change the color. Extreme dehydration will darken it; in renal failure, it is extremely pale. In severe nephritic conditions, and in cystitis where there is much tissue damage, the urine may be nearly opaque. In chronic glomerular nephritis, resulting in renal atrophy, the urine is clear. A low specific gravity, especially when it approaches that of the glomerular filtrate, indicates renal insufficiency. A high specific gravity could indicate a nephritis. The normal range for canine urine is 1.015 to 1.030. Canine urine is normally acid; an alkaline condition is almost always found in cystitis.

Other tests for the presence of urinary

tract disease are albumin, glucose, and sediment.

There are approximately 16 reasons for the presence of albumin in the urine; only one of these is nephritis. Any purulent process in any part of the urinary tract will produce an albuminuria. A diagnosis of nephritis cannot be made upon finding albumin in the urine unless the sediment bears out this diagnosis.

Glycosuria can result from various causes and is not, by itself, sufficient evidence to diagnose diabetes mellitus. If urine is drawn within several hours after eating, it will contain reducing substances. Chronic nephritis is accompanied by a lowering of the sugar renal threshold resulting in a positive sugar test in many cases.

Sediment findings are the key to nearly all urinary tract pathology. Casts in urine are indicative of renal inflammation, if present in any number. Cellular casts in any quantity give a more serious prognosis than do hyaline, waxy, or fatty ones. Occasionally, casts will contain red blood cells. These point to a more serious prognosis than do other types of cellular casts.

Renal epithelium is usually cuboidal and often several cells are seen in a clump. Epithelial cells from the other parts of the urinary tract are of various sizes and shapes. Time does not permit listing all. Suffice to say that disease processes can be somewhat localized by determining the origin of the cells seen in the sediment.

Red and white blood cells are often seen in the sediment. Semetimes, it is difficult to tell them apart. An easy method is to increase the light coming to the microscope, then the red cells show a greenish cast and the white ones tend to fade and disappear. Another simple test is to add a few drops of acetic acid to the slide. This disintegrates the red cells and stains the nuclei of the white cells so that a differentiation is easily made. The latter method is also used when a hematuria is so severe that the red blood cells cover up all other sediment. By destroying the red blood cells with acetic acid, other urine sediment may then be studied.

Whenever white blood cells are found, and the purulent process seems extensive, bacteria should be looked for. If found, the slide should be stained with Gram's stain. It must first be determined whether the bacteria seen are gram-positive or gramnegative, before the right therapy can be started.

Examples of how results of urinary analysis are applied are (table 1): Assume that all patients show the same symptoms—inability to hold urine, frequent urination, and excessive thirst. Due to the lack of sediment and the low specific gravity, a chronic

nephritis in the terminal stages could be suspected in patient 1. If the blood urea nitrogen were elevated, it would confirm the diagnosis of renal insufficiency due to a chronic nephritis. If, however, the blood urea nitrogen was normal, then diabetes insipidus should be suspected. In patient 2, the increase in specific gravity, the albuminuria, and the presence of the renal cells, casts, and red blood cells would point to an acute nephritis. In patient 3, the strong odor and large amount of sediment, with chiefly bladder epithelium, would indicate a cystitis.

There are several kidney-function tests that should be performed when the urine analysis is indicative of renal insufficiency. One of these, blood urea nitrogen, was used for patient 1 above, in differential diagnosis. Nonprotein nitrogen is probably the other best-known function test. Both of these are elevated in kidney disease and the determination of only one of them is necessary. Usually, a blood urea N₂ above 60 mg./100 cc. in renal disease is indicative of a fatal termination.

a fatal termination.

Often, it is desirable to x-ray the kidneys using diodrast intravenously. This is usually done to discover an abscess, calculus, renal tumor, or bladder tumor. However, if diodrast does not appear in the kidneys within five minutes following injection, renal failure is indicated. A rough estimate of the amount of kidney damage can be gained by the time taken for the appearance of the diodrast in the kidneys; in this way, diodrast is also a function test.

CONCLUSION

In the short time allotted for this talk, it is impossible to cover the field of laboratory work thoroughly. However, if this talk has stimulated some interest in one or more fields of laboratory diagnosis, then it will have been worth while. There is no question but that laboratory reports are helpful in practice. It is up to us as practitioners to know enough about hematology and urology to be able to interpret the reports. If this is not possible, a pathologist is needed for interpretation. Most pathologists are willing to help in such problems.

Much study is needed in this particular field. Normals need to be more firmly established for dogs; more work needs to be done in canine hematology; many other human laboratory examinations could probably be adapted to dogs to permit more specific diagnosis. This field offers a real challenge to the small animal practitioner.

DISCUSSION

CHAIRMAN ELKO: Are there questions from the

DR. STERN (New York): In acute virus diseases, isn't it usual to get a drop in white count?

DR. KONDE: It certainly would be expected. Quite often the count will be within the lower range of normal, around 5,000. When counts get much below that, I begin to worry.

DR. JEAN GOUDY (District of Columbia): Have you used B₁₀ in the treatment of macrocytic anemia?

DR. KONDE: No. We have used folic acid and liver, separately or in combination, and have found them most satisfactory. We have not had a refractory case of macrocytic anemia. We are probably lucky, there.

DR. GOUDY: I treated an 8-year-old Boston Terrier for three years with folic acid and liver, without success; but B₁₀ brought the count up.

The increasing incidence of kidney worm lesions in the livers of Cornbelt hogs indicates a northward spread of the parasite.

Several new compounds known as bisphenols are useful in the prevention of coccidiosis in poultry, but they have no value after infection has occurred.—P. A. Hawkins, D.V.M., Michigan.

A macroscopic tube agglutination test was used in testing approximately 300 bovine serum samples for Vibrio foetus infection. The test will be used more extensively to determine its reliability.—G. R. Moore, D.V.M., Michigan.

One dairy cow provides about as much veterinary practice as 20 feeder steers. Knowledge of beef cattle management, correct type, and popular pedigrees are necessary for success in feeder cattle practice, because they are important factors in the profit derived from this type of livestock.—
F. B. Young, D.V.M., Waukee, Iowa.

Efficient beef cattle production involves a practical application of truths derived from many sciences. Parasites and diseases must be controlled, and adequate nutrition secured. Management practices must contribute to the well-being of the animals, and their efficiency of production, and progressive breeding methods must be used to get maximum returns from improved methods of feeding and management.—A. D. Weber, Ph.D., Kansas.

Careful examination of the herd before vaccinating for hog cholera is important in avoiding postvaccination troubles. Pigs suffering from serum shock after vaccination for hog cholera can often be revived by dipping them in a tank of cold water.—A. G. Krause, D.V.M., Iowa.

Influence of Host Thyroid Condition on Parasitism

Recent interest in feeding thyroid-stimulating and thyroid-depressing drugs to live-stock, including poultry, to influence growth and production prompted Todd, of the Kentucky experiment station, to investigate the effects of such drugs in the presence of internal parasites (J. Parasitol., June, 1949).

The results suggested that drug control of thyroid activity, fitted to the breed of the bird and specific parasitic conditions, has immediate application in combating poultry parasite problems.

Parasitism in farm animals must be considered in stages other than the adult, because in many instances the larval form is much more damaging than any other stage. This is highly important, because this stage is the most difficult to reach with medication, and therefore emphasizes the need for breaking the life cycle at some other point—preferably by preventing or reducing the initial ingestion of infective ova.—A. H. Groth, D.V.M., Missouri.

Infection and Phagocytosis

Studies at the Washington University medical school (Science, Aug. 19, 1949) demonstrated that strands of reticulum enable leucocytes to phagocytize encapsulated bacteria in the absence of antibody. The fibrinous properties of early bacterial exudate (in acute infections) contribute to antibacterial defense by promoting surface phagocytosis. In chronic infections, however, where most of the leucocytes in the exudate are nonviable, the fibrinous strands may act as a mechanical barrier to recovery by interfering with adequate drainage of the lesions.

The fecal examination can be misleading in making a diagnosis of parasitism in ruminants — since the number of eggs seen may be grossly influenced by the egglaying proclivities of the female worms present in the stomach or intestine. Even direct examination is difficult, because the large Haemonchus contortus, which is easily seen, may be much less damaging than the small trichostrongyle, which is often overlooked.—R. D. Turk, D.V.M., Texas.

We have used some B. T. V. and crystal violet vaccine, and believe they have a place; but, when we want to feel sure of a good. solid immunity against hog cholera, we still prefer to use virus and antiserum.—
F. M. Wilson, D.V.M., Jouvi.

NUTRITION

Dairy Cattle Nutrition

Colostrum is high in total nutrient content, especially in protein and vitamins. The protein is largely in the form of globulin which contains antibodies or immune substances which help to protect the young calf from infections of the digestive system.

The economic utilization of all colostrum in raising dairy calves is important. Surplus colostrum produced was estimated to amount to 51 lb. for each cow, and if one-half of this amount from each of the 23 million dairy cows in the United States could be utilized in raising calves, it would represent a saving of more than 570 million lb. of marketable milk in addition. Although there was no evidence that colostrum prevented scours, it was definitely shown that no case of calf scours was caused by the feeding of colostrum.

The feeding of vitamin A supplements to pregnant cows results in the storage of added quantities of vitamins in the body of the calf. Calves from cows so supplemented made greater gains following birth and the calves had less scours than calves from cows that were fed a standard fitting ration. There is no explanation as yet of the advantages of prenatal supplementation over postnatal administration of vitamin A.

In a longtime experiment at the Vermont station, there appeared to be no advantage whatever in adding a vitamin D supplement to the rations of cows fed high quality, early cut timothy in comparison with timothy that was cut late. These workers concur in the statement made in "Recommended Nutrient Allowances for Dairy Cattle" by the National Research Council committee to the following effect: "It is probable that under usual farm conditions adequate amounts of vitamin D are supplied by sun-cured roughages or provided by the action of sunlight." Other

experiments failed to show any particular advantage in feeding value for barn-dried hay over field-cured hay.

Vitamin E has no influence upon reproductive performance in dairy cattle or other farm animals. At least, there is no reliable experimental work to show such effect, although it is known that vitamin E deficiency does lead to reproductive failure in rats and poultry and that the deficiency may cause muscle dystrophy in rabbits, goats, and sheep. When wheat germ oil was added to normal rations of bulls used in artificial breeding programs, there was no recognizable influence on the volume of semen produced, the number or motility of spermatozoa, or the fertility of bulls.

Cobalt is required by ruminants, but the exact functions which it performs are not known. In experiments with sheep, it was possible to separate cobalt-deficient sheep from the cobalt-fed sheep on the basis of stains of bacteria in rumen content. There were almost twice as many bacteria per gram of rumen content in cobalt-supplemented animals and there were some cultural differences. Moreover, the fiber was in an advanced stage of decomposition in the cobalt-fed sheep, while it was only slightly disintegrated in the rumens of the cobalt-deficient animals. When 21 western yearling sheep became cobalt deficient by being fed a ration low in cobalt for eight months and were then divided into three equal groups, the following results were obtained. The first group fed 1 mg. of cobalt per day began to respond in one week. They were gaining weight, had good appetites, and there was increased hemoglobin value in the blood. which received 1 mg. of cobalt by injection each day reacted the same as the control animals which received no cobalt,-they continued to decline.

In spite of these findings, there appears to be no necessity for general use of cobalt in all sections of the country, because cobalt deficiency is not likely to occur even on cobalt-deficient soil when cattle are fed legume hays.

Lack of feed is the most common de-

Excerpts and abstracts from "What's New in Dairy Cattle Nutrition" by K. L. Turk, Ph.D., Veterinary Extension Quarterly No. 114, April 3, 1949, University of Pennsylvania School of Veterinary Medicine.

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ficiency in dairy cattle feeding. Cows and heifers seldom suffer deficiencies of vitamins, minerals, proteins, and other essential nutrients when they get plenty of high quality feeds.

Pig Anemia and Copperas

The value of copperas in the rations of pregnant sows as a preventive of nutritional anemia was studied by L. E. Hanson and R. J. Meade at the University of Nebraska.

They conclude that the feeding of copperas to bred gilts during the period of gestation, either as 0.5 per cent or as 0.2 per cent of the ration.

 a) did not result in increased vigor of the pigs at birth;

 b) did not result in the birth of larger pigs;
 c) did not result in higher hemoglobin levels in the blood of pigs at birth;

d) did not prevent the development of anemia in pigs during the suckling period;

e) did not result in heavier weaning weights.

Although anemic pigs are good subjects for the development of enteritis, the feeding of copperas to brood sows during gestation was not recommended, since it was apparent such feeding was not as effective as the administration of iron to the pigs soon after birth. The administration of iron was most effective when treatments were given at birth, at 1 week, and at 2 weeks of age. Pigs that were 2 to 3 weeks old when the first dose of iron was administered did not avoid anemia and complicating diseases nearly so well.

Since these results conflict with those reported by the North Dakota station, which has recommended that crude iron sulfate or copperas be fed to sows during the gestation period because of the increased vigor of pigs at birth, of the higher hemoglobin values in the blood of pigs at birth, a reduction in the rate of decline of hemoglobin values during the suckling period, and a lower mortality between birth and weaning, these figures were subjected to further study.

Noting that iron is considered to be a trace mineral, Dr. M. J. Swenson questions the reason for using 0.2 and 0.5 per cent in the feed. The National Research Council considers 0.6 per cent of the ration sufficient calcium, which is universally regarded as an essential element.

Ferrous sulfate or copperas is an astringent and is used in cases of diarrhea. When exposed to air it may form ferric sulfate, which is even more astringent than the ferrous form. Milks lists the therapeutic dose of ferrous sulfate for swine as 1 to 2 Gm. Assuming that pregnant gilts

eat 6 lb. of grain per day, a Nebraska ration containing 0.2 per cent of copperas would supply 5.45 Gm. per day per gilt; and the ration containing 0.5 per cent of copperas would provide 13.62 Gm. per day. Dr. Swenson further calls attention to the fact that Morrison's "Feeds and Feeding" (p. 122, 21st ed.) states that excess iron tends to interfere with the absorption of phosphorus, through the formation of insoluble iron phosphates. Since animals may be poisoned by too much copper and since copperas contains copper as well as iron, this possibility should be considered in explaining the good condition of the control pigs.

[Because of this conflict of ideas among workers in the field, it would seem logical that additional experiments should be conducted to clarify the problem of using iron in its crude or purified form in the pre-

vention of anemia.-ED.]

A high protein diet tends to produce a high grade of disease resistance or immunity. This is especially important in young animals.

When thyroprotein was fed to four breeds of pigs at different levels, the experimental pigs gained in sixteen weeks from 11.3 to 27.0 lb. per pig more than did the controls. The feed required per unit of gain was reduced from 4.5 to 5.0 per cent in the various lots.—E. P. Reineke, Ph.D., Michigan.

Cobalt for Livestock

The first sign of cobalt deficiency is gradual loss of appetite, which is followed by loss in production and in weight. Somewhat later, anemia develops and becomes progressively worse. This anemia is normocytic and normochromic, and it differs from the anemia of iron and copper deficiency which is microcytic and hypochromic. It also differs from pernicious anemia in man, which is macrocytic.

Cobalt deficiency leaves few lesions which can be determined upon postmortem examinations. Only two pathological observations have appeared with any degree of constancy. They are a fatty degeneration of the liver and a large deposit of hemosiderin in the spleen. There was no indication that cobalt deficiency was concerned in ketosis or acctonemia in cattle.

Response of cobalt-deficient cows was much more rapid when the cobalt salts were fed than when they were injected. Cobalt appears to be necessary for normal numbers, types, and cultural characteristics of the rumen bacteria. When crystalline vitamin B₁₂ was injected into cobalt-deficient lambs, there was absolutely no response by these animals. Other experiments have also indicated that vitamin B₁₂ is an ineffective supplement in cobalt-deficient lambs. This leads to the tentative conclusion that cobalt is essential in the metabolism of sheep in some stage other than the formation of vitamin B₁₂. Sufficient work has already been done to show that there are cobalt-deficient areas for cattle and for sheep in New York, Wisconsin, Michigan, New Hampshire, North Carolina, and Florida. Other areas may be revealed later.—S. E. Smith, Ph.D., Cornell Natrition Conference. Nov. 3-4, 1949.

Poultry Nutrition

Hock trouble appears in poults at the eighth to the fourteenth week and it usually is limited to the largest and fastest growing male turkeys, according to M. L. Scott, A. B., at the Cornell Nutrition Conference last November. The condition is not what has been called perosis in chicks. Early work indicated that it might be the result of a deficiency or an imbalance of choline, glycine, and the animal protein factor during the early growth period. Use of these substances in corrective rations indicated that complete prevention was secured only when relatively high levels of choline and glycine were used, and then only in the presence of an adequate amount of vitamin B₁₂.

Trace Minerals for Swine.—When pigs were fed a basal ration, plus vitamins A. D. and E. they gained at the rate of 1.09 lb. per day, but the average daily gains were increased to 1.25 lb. when iron, cobalt, copper, and manganese were added to the basal ration in addition to the vitamins.—Noland and Willman, Ph.D., Cornell Nutrition Conference, Nov. 3-4, 1949.

Vitamin B12 for Poultry

Vitamin B₁₂ is required for growth and reproduction of chickens. The progeny of B₁₂ depleted hens are characterized by high mortality during the first week of life and by poor feathering. Supplementing the rations of chicks after hatching did not correct these conditions. Therefore, it is highly important that the rations of hens in breeding pens be supplied an adequate amount of this vitamin. Data furnished indicate that about 2 mg. of B₁₂ per 100 Gm. of diet are necessary, and that this amount would be furnished by about 8 per cent of Menhaden fish meal, 4 per cent of

unextracted liver meal, 2.5 per cent of fish solubles, or 16 per cent of meat meal.— Cornell Nutrition Conference, Nov. 3-4, 1949

Animal Protein Factor.—APF, heralded as an important growth factor for the swine breeder, is not a protein as the name implies. It is a synthetized combination of vitamins, including B₁₂, found in animal proteins such as liver, fish, bone, and tankage, and is available commercially for general use as a supplement in the feeding of hogs. It is said to increase gains up to 10 per cent over nonsupplemented rations of equal composition. Trials conducted at Iowa State College show that APF, contraction for "animal protein factor," is a product of importance in swine practice.

Calcium Deficiency in Cows.—At the Florida Agricultural Experiment Station, cows given low-calcium feeds grown on lime-deficient soil averaged only 4,856 lb. of milk in 218 lactations, whereas cows getting enough of this mineral averaged 7,092 lb. in 73 lactations. The deficiency was corrected by adding 2 per cent of finely ground steamed bone meal to the concentrates. Heavy producers also received a small amount of alfalfa hay.—Country Gentleman, Dec., 1949.

Pigs raised in pasture and in drylot began goosestepping in seven weeks when fed a ration of corn, soybean oil meal, casein, complex mineral, and vitamins A, D, thiamine, riboflavin, niacin, and pyridoxine. Control pigs receiving 25 mg. of pantothenic acid per pound of feed, in addition to the basic ration, remained normal.—W. N. Mc-millen, M. S., Michigan.

A nutritional basis of baby pig disease is suspected, because the condition is seldom seen in fall pigs. However, it is hard to explain why it is seldom seen in litters from old sows, or why it appears in a few litters only, even when all sows are fed and managed as a unit.—F. M. Wilson, D.V.M., Iowa.

Traumatic gastritis is a frequent companion to cobalt deficiency in cattle, because the animals develop a depraved appetite and swallow all sorts of metallic objects.

—Torbjorn Moll, Norway. (Research Assistant, University of Wisconsin.)

Vitamin E (alpha-tocopherol) was credited with bringing about symptomatic improvement in controlled studies on 35 children afflicted with St. Vitus's dance.—
Medical Times, Nov., 1949.

EDITORIAL

The AVMA-Its Objectives and Accomplishments

The objectives of the AVMA as set forth in its Constitution are "to advance the science and art of veterinary medicine, including their relationship to the public All the deliberations of the legislative bodies of the Association are directed toward that end. The Board of Governors, the Executive Board, the House of Repre-sentatives, the several committees and councils of the Association, all are working toward the goal of improving the quality and standards of veterinary medical prac-They work through numerous chan-On a national scale, the AVMA is the spokesman for the veterinary profession by contact between its officers and the officers of allied or related groups in the other The AVMA, through medical professions. its officers and staff, carries on this work by contacting members and veterinarians throughout the continent. During the past year, officers and staff members of the AVMA attended and addressed more than 50 meetings of constituent associations, district veterinary medical associations, stu-dent chapters, and other gatherings at which the story of veterinary medicine could be told to advantage.

The accomplishments toward attainment of these objectives are reported in its Journals, and particularly in the proceedings of its annual conventions. The member who asks "How does the AVMA operate?" and "What is it doing for me?" is admitting that he has not accepted the privileges nor discharged the obligations of a member. To the AVMA member who does not keep abreast of happenings in the Association as reported in its Journals and particularly in the proceedings of its annual convention, it is difficult to explain, either briefly or in reasonable detail, the activities of the Association and the dividends which have accrued to each member through these activities.

PRIVILEGES

The AVMA is an organization of 10,000 members. Certain privileges are extended to every member. Among these are:

to vote, at the annual convention, for president-elect, treasurer, and each of the five vicepresidents (all terms of 1 year);

the right to nominate and vote for a member

of the Executive Board from his district by direct mail ballot (term 5 years):

to have a voice, through his constituent association, in the selection of a delegate to the House of Representatives (term 4 years);

to serve as delegate to the House of Representatives;

to become a resident secretary in his state

to serve as chairman or member of a committee;

to hold any office in the Association to which he may be elected or appointed;

to present scientific papers at the annual convention;

to submit papers to the Journals of the AVMA.

In all these activities, a member helps to formulate the program and policy of the Association.

BENEFITS.

Through its designated councils and standing and special committees, some 30 in number, the AVMA engages in all phases of veterinary medical activity.

If, seemingly, progress is slow, it may be due to the fact that some members have not helped committee chairmen by rendering the degree of cooperation necessary. Also, the small number which always makes up a committee may not be familiar with the specific problems of some particular geographic section of the country or of some specialized practice group within the profession. Through his delegate in the House of Representatives and through the member of the Executive Board from his district, or by direct communication with the AVMA office, any member may convey to any particular committee a recommendation or suggestion for work which can and should be Experience with done by that committee. committee chairmen indicates that they welcome such suggestions and would gladly work on problems of immediate interest.

ACCOMPLISHMENTS IN PROFESSIONAL RELATIONS

The professional relations program of the Association includes activities designed to strengthen and maintain AVMA relations with constituent associations, with individual members, with student chapters, with committees and councils, and with organizations whose work relates to veterinarians.

Through its committee and officers, the AVMA has been a potent factor in achieving the following:

enacting a Code of Ethics;

gaining the adoption of higher educational standards which have led to elimination of quackery and have been a powerful protector to the health of livestock and of the people;

leading the way to the formation of a Veterinary Corps in the United States Army; implementing the upgrading of Bureau of Animal Industry veterinarians;

helping to organize and operate a procurement and assignment service during the second World War:

carrying on a public relations program on a national basis;

supporting a National Veterinary Register of Pathology;

organizing a research council which supervises research and grants scholarships;

publishing the monthly JOURNAL of the AVMA for its members and the American Journal of Veterinary Research (a quarterly) to present new findings in research and clinical matters:

sending officers and staff members to interpret and to digest these reports to veterinarians gathered at state and sectional meetings.

JOURNALS OF THE AVMA

The Journals of the Association are a continuous historical recording of the progress of the profession. This progress deals not only with the research and teaching fields but, more especially, with the clinical application of findings in new fields. Case records are given preference over other material on the publication schedule of the Journal of the AVMA.

PUBLIC RELATIONS ACTIVITIES

The public relations activities of the AVMA reach into many fields and are designed to win recognition and prestige for veterinarians.

A series of weekly scripts on livestock health are prepared in the form of dialogue between an announcer and a veterinarian and are available to constituent associations for local use by members of the constituent associations.

State and local associations are assisted in preparing publicity for their annual or other scheduled programs.

Weekly releases on livestock and pet health are sent to wire press bureaus and news agencies. Semimonthly farm radio briefs, consisting of short items on livestock and pet health problems, are issued to almost 300 radio stations in the United States and Canada as filler items for farm programs.

The AVMA Press Service, a clipsheet, is issued monthly to over 4,000 weekly newspapers and farm publications and contains ready-to-use news stories on livestock and pet health.

DUTIES AND OBLIGATIONS

The obligations and duties of a member of the AVMA are not burdensome. If he is wise, he reads the JOURNAL to keep informed about what the AVMA is doing to further the standing, education, knowledge, and efficiency of both the individual AVMA member and the profession.

It is to his advantage:

to attend meetings of his local, state, regional, and national associations, and to participate in discussions at these meetings;

to vote for Executive Board members and delegates to the House of Representatives;

to attend the annual AVMA meeting and vote for the national officers who are elected at that time:

to familiarize himself with the Code of Ethics of the AVMA and conform to its provisions.

The AVMA serves its members and the public through committees. It may sometimes err in judgment and may often seem to move too slowly. National societies such as ours cannot act quickly or hastily on matters which concern the standing and welfare of thousands of veterinarians and groups of members in different fields of professional activity. It is not inertia or an unwillingness to move but, rather, it is the need to be as nearly right as possible when action is taken.

Duty or Privilege

"Individual, association, or nation, we are dominated by the problems we face.

"No man's life can be charted in advance. Men survive, grow, and progress through victory over difficulties. Their attitudes, knowledge, wisdom, their whole philosophy of life is wrought on the anvil of struggle under the hammer of experience.

"Our Association has many problems ahead. As election for the Board of Directors comes up, let us give thought to a vote for a veterinarian to serve who will devote his time to our profession and organization."

So says Dr. Hubert Shull, president, Texas Veterinary Medical Association, in the Bulletin (August, 1946) of that Association.

CURRENT LITERATURE

ABSTRACTS

New Ring Test Antigen

The preparation of antigen to be used in conducting the ring test for brucellosis is a time-consuming, troublesome, and expensive process. The relatively poor yield further emphasizes the question whether it is justifiable to spend so much time preparing antigen for so simple a test.

The new technique uses strain 19 in Roux flasks, with the standard medium and the procedure outlined for producing vaccine. When the growth has been washed from the medium, 1 Gm. of 2-3-5-triphenyltetrazolium chloride is added to each 500 cc. of the concentrated antigen. This is incubated at 37 C. for twenty hours, so that each individual organism is stained an intense red. The antigen is then thinned with an equal volume of the original diluent (saline plus 1% glycerin) to which 1 per cent of phenol has been added.

This antigen is now complete, and ready for use, but must be held under refrigeration. It is used at the rate of 1 drop in 1 cc. of milk, and incubated for one hour at 37 C. as usual. When tested on 1,000 samples, about half of which were positive, the old and the new tests agreed remarkably well.—
[H. Bendtsen: A New Method for Staining of Living Bacteria, Particularly Serviceable for the Preparation of Brucella Ring Test Antigen. Nord. Vet. med., 2, (1949): 915-919.]—A. G. K.

Topical Penicillin Treatment of Foot Rot

The action of Russian penicillin on three strains of Actinomyces necrophorus was tested in vitro. Growth was inhibited for seven days in the presence of 0.04 I.U. of penicillin per cubic centimeter of liver medium containing 0.1 per cent agar and 0.5 per cent glucose.

Clinical trials were conducted on 67 cows in an extensively infected herd. Twelve per cent of the animals were showing general symptoms: increased pulse and respiration rate, and loss of appetite. The author attributes the prevalence of foot rot to unsanitary conditions and notes that 94 per cent of the cases were in the hind feet.

Scrapings were taken from the ulcers and examined bacteriologically. In 6 per cent of the samples, an organism was found which resembled A. necrophorus morphologically.

The affected area was cleaned and necrotic tissue was removed. The foot was bandaged with a rubber drainage tube fixed in position to irrigate the lesions. Aqueous penicillin solution, 100 to 200 I.U. per cubic centimeter of physiologic saline, was administered three times a day for

three or four days in doses of 10 cc. After the first three or four days, treatment was continued with an emulsion of penicillin in cod liver oil every two or three days. This preparation contained 1,000 I.U. of penicillin per cubic centimeter. The bandage was changed every three to five days.

Improvement was noted in 30 cows after three days of treatment, in 32 cows after four to seven days, and in 5 cows after eight to fourteen days. The ulcers filled with smooth granulation tissue, the character of the exudate changed, and the lameness disappeared.

Systemic treatment by intramuscular injections of 500 I.U. per kilogram to a total of 1.5 million I.U. was without effect.—[V. F. Grezin: Treatment with Purified Penicillin of Necrobacillosis of the Feet of Cattle. Veterinariys, 26, (Nov., 1949):31-33.]—R.E.H.

Canine Infectious Hepatitis in Australia

Hepatitis contagiosa canis (Rubarth) is reported for the first time in an Australian dog. The possibility that the disease has long gone undetected is acknowledged by the authors. Characteristics of the case paralleled those described by Rubarth in Sweden and Riser and Coffin in the United States.

—[J. H. Whittem and D. C. Blood: Hepatitis Contagiosa Canis (Rubarth) in Australia, Austral. Vet. J., 25, (Aug., 1949): 166-171.]

Arsenical Dipping of Milk Cows

Arsenical dipping exerts an unfavorable influence over the milk yield of cows, according to this work

The material for this study was gathered in 59 dippings of 2,163 cows. The results were classed for general influence, monthly variations, and variations between rainy and dry periods.

The average milk yield for three days following the dipping was 2.98 per cent less than that of the three days preceding the dipping. The greatest loss occurred on the day immediately following the dipping, when production fell to 5.97 per cent below normal.

The influence varied considerably with the month of the year, being lowest in April, when the loss was only 1.47 per cent, and greatest during the hot and rainy months from October to March, inclusive.

From the second day after dipping, the milk production increased, becoming normal on the third day. The irregularity in milk production as evidenced by the above results shows that the greatest loss coincided with the months of highest temperature. The degree of arsenical absorption possibly varies but little in different subjects, when the arsenic content of the dip is maintained by frequent tests and corrections. The authors conclude that the unfavorable effect of the dipping may be due to operational factors, such as excitement of animals by handling and crowding, which are almost unavoidable under the circumstances.—[Francisco de Paula Assis and L. Pacheco Jordao: The Influence of Arsenical Dipping Over the Milk Production. Boletin da Sociedade Paulista de Medicina Veterinária (Brasil), 8, (Inne, 1949): 107-117.]—O. A. LOPEZ-PACHECO.

Infectious Hepatitis of Kids

The disease described was an acute fatal septicemia which killed 35 to 45 per cent of the kids between 5 and 30 days of age in the infected herds. Lambs kept with the kids were not affected. The course was two to three days. The pathologic changes were constant, and concentrated in the parenchymatous organs, especially the liver.

An organism resembling Salmonella columbensis was isolated easily, often in pure culture, at autopsy. Of the small laboratory animals, only the white mouse was susceptible to the organism. Lambs inoculated with it passed through a febrile reaction and recovered in ten to fifteen days. Incoculated kids showed the syndrome of the natural disease in two to three days and died in three to five days with typical lesions.—[A. B. Khachatrian (Armenian Vet. Research Inst.): Infectious Acute Hepatitis of Kids. Veterinariya, 26, (Sept., 1949): 33.]—R. E. H.

Trauma and the Nervous System in Anthrax Immunity

In an experiment with Pasteurella bacterin, the author used a rabbit which had survived an anthrax immunity test twenty-eight days before. It died of anthrax eighteen hours after injection. This led to the hypothesis that living anthrax organisms may be harbored in immune animals and recover their pathogenicity when the host is subjected to trauma.

Twenty-three rabbits which had been vaccinated against anthrax and had survived a lethal dose of Bacillus anthracis were traumatized eighteen to twenty-three days later by cutting off part of one ear. Five died of septicemic anthrax.

Another group of 33 rabbits were vaccinated against anthrax. In three to twenty-two days, they were subjected to a challenging dose of B. anthracis and ear biopsy simultaneously; 18 died. Of 10 vaccinated rabbits challenged without trauma, all lived. Of 2 rabbits challenged with B. anthracis plus ear biopsy thirty-four days after vaccination, neither died.

References in the Russian literature to the in-

fluence of the autonomic nervous system on agglutinin production, phagocytosis, and activity of the reticuloendothelial system led the author to test the effect of adrenalin, pilocarpine, and atropine on anthrax-immune rabbits. Adrenalin and pilocarpine were each administered to 2 rabbits simultaneously with a challenging dose of B. anthracis. These drugs were without effect on immunity, and the animals lived.

Of 7 rabbits given atropine with a challenging dose of B. anthracis ten days after vaccination, 6 died. Of 5 rabbits challenged without atropine, 1 died. Of 4 rabbits challenged with B. anthracis and atropine twenty-six days after vaccination, 2 died of anthrax, 1 of pasteurellosis.

In all cases except the last, B. anthracis was recovered in pure culture from the animals that died. The challenging doses of B. anthracis were 100 per cent fatal to unvaccinated controls.—[E. P. Stefanova: The Influence of Trauma and the Importance of the Nervous System in Anthras Immunity. Veterinariya, 26, (Sept., 1949): 15-19.]—R.E.H.

Food Value of Sheep Milk

As a result of its high content of fat and protein, sheep milk is a valuable food. In Germany, except for east Frisian milk sheep, no value is attributed to breeds of sheeep for milk production. The profit of a herd can be increased by milking regularly. Also, without greatly increased outlay in work and money, an additional source of fat can be opened.—[E. Endrejat: The production of Sheep Milk for Increasing the Profit from Sheep Production and the Opening of an Additional Source of Fat. Deutsche Tierärstl. Wchnschr., 56, June 15, 1949.]—R.J.

Johne's Disease in Sheep, Zebu, and Antelope

The disease occurred in sheep 4 to 7 years of age. The symptoms were: brief periods of diarrhea, lagging behind the flock, thirst, loss of condition, submaxillary edema, pale mucosa, and loss of appetite. Of 57 sheep subjected to autopsy, 33 showed the characteristic gross pathology of Johne's disease. Acid-fast bacilli were demonstrated in an unspecified number of cases by concentration with 50 per cent antiformin.

In a group of 10 sheep, 9 reacted to intradermal avian tuberculin, 7 gave a febrile reaction to subcutaneous avian tuberculin, and all showed gross lesions at autopsy.

Thirty sheep were examined by the complement-fixation and intradermal paratuberculin tests and then slaughtered. One sheep gave a positive reaction to both tests, and had gross lesions of Johne's disease at autopsy. Eight showed agreement of complement-fixation test and gross pathology. Seven showed agreement of paratuberculin test and gross pathology. One sheep was positive to the complement-fixation test only, and another was positive to the paratuberculin test only. Twelve were negative to all examinations.

Johne's disease was also diagnosed at autopsy and bacteriologically in a zebu-Ukrainian cattle hybrid, in an Indian zebu, and in an antelope.—
[K. A. Dorofeyev and L. A. Kalachev: Paratuberculous Enteritis in Sheep and Wild Animals.

Veterinariya, 26, (Nov., 1949): 21-24.]—R. E. H.

Intestinal Flukes in Elephants

Specimens of an undescribed species of fluke were removed from large and small intestines of elephants at autopsy. The fluke is described as follows:

Body form—long, egg-shaped, comparatively thick.

Body length-5 to 7.5 mm.

Body width—at point of division of intestine, 2.3 mm.; at point of oral sucker, up to 3.9 mm.

Mouth sucker—lies terminally with thick, blunt, internal rows of hooks. On the anterior end are six crowns of blunt hooks.

Genital opening—round to oval with prominence of body lying behind division of the intestine, no genital or abdominal sucker. Comparatively large, lying subterminal, external diameter 1.3 to 1.4 mm., diameter of aperture 0.9 mm.

Mouth sucker—paired diverticulae behind, unclosed by muscular bulbus. Esophagus with developed pharynx. Yolk sac follicular and lying laterally. Testicles, deeply lobed and without cirrus sack, one behind the other.

The stock of the ovary lies paramedian behind the testicles. The uterus at first contains a few coils, then is straight.—[Nickel: A Trematode of the Gemus Hawkesius from Elephants. Deutsche Tierarstl. Wchnschr., 56, June 15, 1949.]—R.J.

A Survey of Literature from Holland

The following abstracts from the Tijdschrift voor Diergeneeskunde were prepared by Dr. Chas. H. Haasjes.—En.

Canine Papillomatosis.-Dr. H. Veenendaal (73,



Fig. I—Papillome of the mucous membrane at the edges of the lips of the dog-before treatment.

April 1, 1948: 211-218) reports success in treating canine papillomatosis involving the nucous mem-



Fig. 2—In the later stages of treatment with colchicine solution (10 successive subcutaneous in-jections—0.025 mg, per day for five days; 0.05 mg, per day for five days), the papilloma dropped off.

branes of the mouth with subcutaneous injections of colchicine solutions,

Bull Semen.—The pH of bull semen was determined by the use of a glass electrode with an accuracy of 0.02 units by Ronnyn (73, March 1, 1948: 136-148). A significant difference in pH of samples of good and inferior quality was noted. The average pH of good quality was calculated to be 6.65 and inferior samples, 7.03. The work indicated that the pH gives some indications that should be used in evaluating semen. Reference is made to the changes in pH that occur during storage and a colorimetric method for determining pH using bromthymol blue indicator.

Bull Spermatosoa.—An electronic microscope was used by Bretschneider (73, April 1, 1948: 233-253; 73, June 15, 1948: 421-433) to measure the heads and observe deviations from the normal of bull spermatozoa. The deviations observed in the different portions of the spermatozoa are listed and given descriptive names. A system for counting the abnormalities is also given.

Agglutination of Salmonella.—A polyvalent agglutinating o-serum which agglutinates with the Salmonella bacteria of the B, C, and D groups is described by Clarenberg and Ving (72, Nov. 1, 1947: 717-720). Through the use of this serum (slide glass agglutination) in meat inspection, the presence of the Salmonella can be determined and objections to the inclusion of the liver in the bacteriologic meat inspection are averted.

Influence of pH Shift on Biochemical Processes.—The activity of hydrogen ions affect the metabolism of cells in two ways (L. Seekles, 72, Nov. I, 1947; 721-723). The actions are first, indirect effect on the autonomic nervous system, and second, influence on the enzymatic processes within and outside of the cells showing a pH optimum, and the action of several vitamins, hormones, and trace elements. The effect of the pH on protoplasm and biochemical processes is discussed, and mention is made of the origin of medical shock. The extent of pathologic symptoms that may result from disturbed neutrality regulation is said to depend upon the extent of the pH shift and its influence on several biochemical processes.

Paratyphoid Bacteria and Liver Distomatosis.—
A bacteriologic examination of bile from normally slaughtered Dutch, Danish, and Irish cattle revealed the presence of paratyphoid bacteria. The more frequent isolation from the Dutch and Irish cattle was associated with the higher frequency of liver distomatosis (Van Gunst and Van Manen, 73, Feb. 1 and 15, 1948: 103-107).

Ultraviolet and X-ray Therapy.—The use of ultraviolet and x-ray therapy is reported by Peters (71, Jan. 15, 1946:553-563). A mild case of demodectic mange recovered with ultraviolet irradiation and styrax ointment applications. A generalized pustulous case dried up after ultraviolet therapy but required x-ray therapy to accomplish healing. A purulent dermatitis, probably a secondary infection, which had been treated for years with internal and external medicines, responded to ultraviolet irradiation but did not recover completely until subjected to x-ray therapy.

Salmonellosis.—The clinical symptoms of salmonellosis, equine and bovine, are described by Beyers (73, Feb. 1948: 85-98), but a bacteriologic confirmation is necessary for a positive diagnosis. The disease is common in Holland and the author suggests that it be made a reportable disease and that infected animals be slaughtered and indemnified as a public health measure.

Salmonella Infections in Eggs of Ducks

All authors agree that Salmonella can be transferred by the duck to the ducklings, through the egg. However, the authors found only shell infection when the eggs were studied within eighteen hours of laying. Yolk infection was found only when the eggs had been incubated for eight days at 37 C. About one month after the beginning of the experiment, it was impossible to show yolk infection, although the shell was still contaminated. The authors theorized that the formation of H-agglutinins, when they are present in the albumen, hinder penetration.—[K. Karlshoj and L. Szabo: Salmonella Infections in Eggs of Ducks. Am. J. Vet. Res., 10, (Oct., 1949): 388-390.1

Newcastle Disease Virus Isolation

The isolation of Newcastle virus is accomplished by emulsifying a small quantity of tissue in about 1.5 cc. of broth and inoculating each of three or more eggs into the allantoic sac with a dose of 0.2 cc. This technique does not demonstrate the virus in every tissue of a bird nor in any tissue of every bird even though the bird may be infected. Failure to recover virus may be due to the fact that the bird is in the late stages of the disease and that immune bodies had developed sufficiently to mask the presence of the virus.—

[F. R. Beaudette, J. A. Bivins, and Barbara R. Miller: The Failure to Recover Newcastle Virus by Egg Inoculation of Dilutions of Organ Suspensions. Am. J. Vet. Res., 10, (Oct., 1949): 368-369.]

Newcastle Disease Virus from Mites

Newcastle disease virus was isolated from washed mites, Liponyssus sylviarum, which were killed on the fourth day after inoculation but not from mites killed on the sixth day. The authors concluded that, under the conditions of the experiment, Newcastle disease-infected mites were unable to induce infection in adult roosters.—
[M. S. Hofstad: Recovery of Newcastle Disease (Pneumoencephalitis) Virus from Mites, Liponyssus Sylviarum, after Feeding upon Newcastle-Infected Chickens. Am. J. Vet. Res., 10, (Oct., 1949): 370-371.]

Penicillin in Swine Erysipelas

Acute erysipelas was diagnosed clinically in 16 swine admitted to the Minsk Municipal Veterinary Polyclinic. Eight were treated with penicillin alone and 8 with swine erysipelas antiserum, followed in twenty-four hours with penicillin. No improvement was observed in twenty-four hours from the serum treatment.

Sodium penicillin was dissolved in distilled water, 100,000 I.U./25 cc., and injected intramuscularly in the thigh or scapular region. The dose for pigs 3 to 4 months old weighing 60 lb. was 100,000 I.U.; for pigs 7 to 8 months old weighing 110 to 130 lb., 150,000 to 200,000 I.U. The injection was repeated in three hours, and again in eighteen to twenty hours. All 16 of the pigs recovered in forty-eight hours without visible complications. After the second dose of penicillin, the temperature was reduced, the appetite and general appearance improved, and the areas of skin congestion began to disappear. If the third dose was omitted, however, there was a relapse in about twenty hours, with a rise in temperature of 1.8 to 2.7 degrees Fahrenheit.

The author concludes that penicillin treatment is no more expensive than serum treatment, for 100,000 L.U. of penicillin cost 5 rubles, and 100 Gm. of erysipelas serum cost 6 rubles. The dose of serum is not given.—[N. A. Khaustovitch and

M. I. Voytov: Treatment of Swine Erysipelas with Penicillin. Veterinariya, 26, (Nov., 1949): 33-34.1-R. F. H.

The Cause of Lymphangitis

Lymphangitis epizoötica can be diagnosed by demonstrating the causative organism, Endomyces farciminosus, in stained smears of exudate from lesions. The organism can be cultivated on most common mediums. Growth is best on medium containing sugar and blood serum and is visible after about four weeks. In cultures, three different stages of growth are discernible: (1) small, oval, sporelike structures; (2) larger oval forms; and (3) small, pluglike processes which may be transformed to spores or filaments. The pleomorphism is similar to that of fungi. The formation of endospores is the basis for the specific nomenclature.—[E. Pollmann: Information on the Cause of Lymphangitis Epizoötica, Endomyces Farciminosus. Duetsche Tierärztl. Wchnschr., 56, July 1, 1949.]—R. I.

Development of Boar Spermatozoe

Motility is a good characteristic and serves to indicate the physiologic maturity of sperm. Accessory secretions stimulate sperm movement in the boar by eliminating the factors which suppress motility. These are high viscosity and high sperm concentration.—[C. K. Rao and R. O. Berry: The Cytoplasmic Drop and the Cytoplasmic Cap in the Development of Boar Spermatozoa. Am. J. Vel. Res., 10, (Oct., 1949): 357-360.]

Fumigation for Newcastle Disease

Newcastle disease virus was placed on a number of different materials and exposed to formaldehyde fumigation. The virus survived two hours of fumigation on cotton pledgets, one hour on glass and wood, one and one-half hours on egg shell, and forty-five minutes on a metal surface. Thick films resisted fumigation for a longer time.—
[P. D. Beamer, A. K. Sutherland, and S. C. Schmittle: Studies on Newcastle Disease. II. The Resistance of Newcastle Disease Virus to Formaldehyde Fumigation. Am. J. Vet. Res., 10, (Oct., 1949): 384-387.]

Navel Infection of Turkeys

The outstanding lesion of this disease is necrosis of the abdominal wall in the region of the navel. It is concluded that some poults were infected when hatched and, if so, died during the first ten days. Others become infected after hatching, and these die during the second ten days of life.

The authors conclude that the disease with which they were dealing is not the omphalitis or navel infection that is ordinarily associated with faulty incubation or insanitary conditions, although the disease was transferred to poults and to chicks by feeding and by swabbing the navels with amnionic fluid of embryos that had died with artificial infection.—[F. M. Bolin, K. F. Schlamb, R. L. Bryant, and D. F. Eveleth: A Virus Infection of Turkeys and Chickens. Am. J. Vet. Res., 10, (Oct., 1949): 391-395.]

BOOKS AND REPORTS

Report of the Veterinary Director-General

The prosperity of the livestock industry of Canada and, concurrently, the general prosperity and well being of the nation is largely dependent on possession of an adequate livestock population of health status which will permit the export of surplus livestock and livestock products to markets from which the most satisfactory returns may be received. This is the basis upon which the health of animals division performs its duties from year to year.—[Report of the Veterinary Director-General, for the year ended March 31, 1949, Department of Agriculture, Canada, Published at Ottawa by Edmund Cloutier. Paper. 55 pages.]

Science Serving Agriculture

This is the title of the 100-page biennial report of the Oklahoma Agricultural Experiment Station (1946-1948). It covers all phases of agriculture from soil and crops to livestock, and includes the economic factors as well as those of production. Available from Oklahoma Agricultural Experiment Station, W. L. Blizzard, director, Stillwater,

The History and Romance of the Horse

Beginning with Eohippus, the dawn horse which varied in size from a tom cat to a Terrier, the author traces the development of the horse through the intervening 45 million years. He does this in a conversational style which all veterinarians will enjoy because of their interest in, and knowledge of, the horse of today.

Building on the thesis that man has always been occupied with two basic problems—survival and entertainment—this book shows the part the horse has played in both phases of man's sojourn on this planet. In doing so, vivid scenes from all over the world pass in review, showing how the horse developed to the stage of Mesohippus, about the size of a sheep, and finally to Equus, the horse of today.

The story shows how man adopted and domesticated the horse, adapted it to riding and to driving, and made it a part of his religion and mythology. The Assyrians harnessed horses to war chariots, and placed archers astride of others. Alexander the Great worked out military maneuvers which emphasized horse-borne and horse-drawn fighting men. The battle of Hydaspes (326)

B.C.) still stands as an unparalleled example of "the brilliant performance of horses in the annals

of military history."

The landing of horses in Mexico by Cortez and in Florida by De Soto is described. The prolificacy of some which escaped from both units is given as the reason for development of bands of horses which roamed extensively through the western plains and the mountain areas. Within forty years of the time that De Soto reached the Mississippi River, horses were being used regularly by all the Indians of the western plains.

Before closing, there are chapters on modern horses—those which race (under saddles or pulling carts), and those which draw the loads in the prosaic jobs of everyday commerce and farming. There are chapters on the breeds of the modern registry associations—the light, the medium, and the heavy or draft societies. And there are a few closing chapters on the doukey, the mule, and the pony.

The manner in which the author traces man's use and abuse of the fine qualities of the horse make this a story which most veterinarians will heartily enjoy reading, and which will add to the background used in daily practice.— [The History and Romance of the Horse. By Arthur Vernon. Cloth. 525 pages. Illustrated. Dover Publications, Irac., 1780 Broadway, New York 19, N. Y. 1946. Price \$2.98.]

Kansas Proceedings

This book contains the full proceedings including the minutes of the business session, the election of officers, and all of the scientific papers presented at the 44th and 45th annual conventions of the Kansas Veterinary Medical Association. The first was held at Topeka on Feb. 5-6, 1948; the latter at Wichita, on Feb. 2-4, 1949.

A brief survey of the table of contents shows the amazing breadth of the program which has been presented annually to the veterinarians who are members of this association. Those who have attended regularly have truly had an opportunity to keep abreast of the developments in the field in which they practice. However, the reader will need to be tolerant of the misspelled words throughout—they stand out prominently on almost every page.—[Proceedings of the 44th and 45th Annual Conventions of the Kansas Veterinary Medical Association, Paper. 1949.]

Australian Livestock Diseases

The annual report (1947-1948) shows that it was necessary to defer commencement of a tick-eradication plan, largely because of lack of fencing material and labor to make the holdings stockproof.

The following research projects are reported: Artificial insemination has been done without charge for three years, but it is proposed that a charge be made for this service in the future.

Toxemic jaundice of lambs affects only the

British breeds and their crosses. Copper and molybdenum appear to be linked with the problem, but several important gaps still persist, notably in handling the flock after the condition appears.

Contagious pustular dermatitis, an important disease in the shearing sheds, is yielding to immunization with a vaccine developed a few years ago. The spines of the saffron thistle, Carthamus sp., abrade the lips and may be a factor in spread of the infection.

Ataxia in sheep continues to be important, and additional observations indicate that grazing on Tribulus terrestris helps to produce the condition.

Bent leg in lambs, which causes pathologic bone changes differing from those of rickets, remains an unsolved problem.

Arthritis in sheep is often, but not always, due to Erysipelothrix rhusiopathiae.

Spirochetosis, an insect-borne disease, is a major problem in the development of a successful poultry industry. An immunizing vaccine offers a degree of promise.

Brucellosis-, tuberculosis-, and mastitis-control plans are progressing at an ever-increasing tempo.—[Livestock Diseases Report, 1947-1948. G. Edgar, B.V.Sc., Director of Veterinary Research. Sydney, Austrolia. Paper. 1949.]

Illinois State Department of Agriculture

This report, which has been greatly delayed, marks the progress made from July 1, 1947, to June 20, 1948. Each of the 13 divisions of the Department has a chapter outlining its activities. The Division of Livestock Industry, headed by Dr. C. E. Fidler, lists among its activities the establishment of diagnostic laboratories, continuation of the tuberculosis- and brucellosis-eradication programs, supervision of health of animals, inspection of health certificates of animals entering and leaving the state, a discussion of some of the principal transmissible diseases of swine, a discussion of Newcastle disease of poultry, hyperkeratosis in cattle, and a statistical summary of much of the livestock culture and movement during the period covered .- [31st Annual Report, Department of Agriculture, State of Illinois. Paper. 268 pages. Illinois State Department of Agriculture, General Office, 200 State Capitol, Springfield, 1949.1

Handbook of Medical Management

This pocket-size book (4" x 7") summarizes the present-day methods of medical management. It is not intended to replace the more complete texts and references on clinical therapeutics, but to serve as a readily accessible source of brief materials on the more common diseases.

Although the text deals entirely with the diseases of human-beings and their treatment by physicians, it contains so much information of practical value that it would be a worth-while addition to the library of almost every practicing veterinarian. This is the first edition, and it is hoped that fre-

quent and regular revisions will be available.— [Handbook of Medical Management. By Milton Chatton, Sheldon Margen, and H. D. Brainerd. 1st ed. Paper. 468 pages. University Medical Publishers, P. O. Box 761, Palo Alto, Calif. 1949. Price \$3.00.1

Yearbook of Swift and Company

This is a brief report covering the activities of the year and including financial highlights, the president's report to the shareholders, charts showing distribution of sales and sales dollar distribution, prices of selected commodities, and answers to some questions about what is Swift and Company. Also included is a financial statement of the company.—[Swift and Company Yearbook, 1949. Paper. 24 pages. Swift and Company, Chicago, Ill.]

Morbidity and Mortality

The report of the Committee on Morbidity and Mortality of the United States Livestock Sanitary Association has been mimeographed and is available from Dr. C. R. Schroeder, chairman, Lederle Laboratories Division, American Cyanamid Co., Pearl River, N.Y.

Meat and Meat Foods

The author was a guest lecturer in the Meat and Dairy Hygiene school at the Chicago Quartermaster depot and will be remembered by many Veterinary Corps officers of World War II. But they would expect Dr. Jensen to delve more deeply into the food-poisoning phase of meat foods and meat processing. Instead, the book is a general résumé of the whole procedure of meat processing from the slaughter floor to the table. The many "side roads" that meat travels on its way to the kitchen such as sausage grinders, curing vats, and smoke houses are discussed. Chapters on meat cookery, meat in the diet, and the concluding chapter on historical notes, which reviews the evolution of man and animals and the development of a taste for meat by human beings, indicates the scope of the material covered in this

Two chapters entitled "Special Microbiological Problems" and "Bacterial Food Poisoning" will arouse the interest of veterinarians interested in meat and food inspection. However, a study of these chapters reveals that the first is concerned almost entirely with the microbiology of meat processing, curing, and storing. The second is such a sketchy résumé of food poisoning that there is little to be learned from it by anyone who has been exposed to food inspection.

It is unfortunate that books must be written so that they will sell by the thousands. Dr. Jensen's vast store of knowledge pertaining to bacterial food poisoning, gathered in a most practical manner, makes him eminently qualified to write a book on the subject that would be of real value to food

inspectors. No doubt, the sale of such a book would be limited and "Meat and Meat Foods" will have a much wider appeal.

Veterinarians will find little of value in this book. If they are primarily concerned with the meat industry they will desire a more thorough discussion of the many facets of meat processing. For one interested in the meat industry as a hobby, it will be found easy to read and not lacking in interest.—[Meat and Meat Foods, By Lloyd B, Jensen, Ph.D. Cloth. 218 pages. The Ronald Press Company, New York, 1949. Price \$3.75.1

Annual Review of Microbiology

Volume 3 in this series of annual reviews contains 18 chapters written by some 20 authors who reviewed more than 2,000 previous publications to arrive at this review.

Veterinarians will be interested in the chapters on the constituents of viruses, the actions of antibiotic agents is vivo, the cellular basis of immunity virulence and pathogenicity, and the types of acquired immunity against infectious disease. The chapter on virulence and pathogenicity was written at the University of Wisconsin, and Dr. C. A. Brandly is one of the authors.

For a rapid review of recent and up-to-date information on a wide variety of subjects, we know of no source which is equal to the annual review series, and this volume is no exception.—[Annual Review of Microbiology, Vol. 3. By C. E. Clifton, S. Raffel, and H. A. Barker. Cloth. 476 pages. Annual Reviews, Inc., Stonford, Calif. 1949. Price \$3.00.1

Income Tax Guide

This booklet was prepared to assist physicians in filing federal income tax forms. After listing briefly the professional deductions permissible, the nontaxable receipts, the nonprofessional deductions, and a tax calendar, the book goes on to discuss each of these items in considerable detail.

Although it was prepared primarily for physicians, it offers many suggestions to veterinarians who are also interested in filing proper income tax reports.—[Physicians Federal Income Tax Guide. By H. J. Campbell and James B. Liberman for the Schering Corporation, Bloomfeld, N. J. Doniger and Raughley, Inc., Great Neck, N. Y. Paper. 96 pages. 1950.]

Public Health in Japan

This is a summary of the historical health data of Japan for the period 1900 to 1948. No similar summary has previously been prepared. In addition, there is a more detailed discussion of the problems, activities, and future programs of the Public Health and Welfare Section, General Headquarters, Supreme Commander for the Allied Powers, in furthering the health and welfare objectives of the occupational mission.

The three volumes abound in charts, graphs, and tables on all phases of public health in Japan. One chapter deals with veterinary medical affairs—the Japan Veterinary Medical Association, the Veterinary Education Council, Control of Animal Diseases, Inspection and Surveillance, and Society for the Prevention of Cruelty to Animals.—[Public Health and Welfare in Japan. General Headquarters, Supreme Commander for the Allied Powers. Paper. 220 pages. Tables and charts in separate volumes. FEC Printing Plant. 1949.]

Increased Postal Rates

According to the provision of HR 2945, a bill to increase certain postal rates, the Associated Business Papers have filed a series of briefs. One is by Mr. E. F. Hamm, Jr., president of Associated Business Papers; another is by Mr. James G. Lyne, a member of the executive committee; the third is by Mr. Godfrey M. Lebhar, who is a member of the Associated Business Papers.

In general, the briefs are a vigorous protest against the drastic increases in second-class postal rates which are proposed by bill HR 2945. If adopted, these drastic increases would be likely to force many business publications out of business.—[Briefs Submitted by Associated Business Papers Relating to HR 2945 (A bill to increase certain postal rates). Paper, 34 pages. Associated Business Papers, Inc., 205 E. 42nd St., New York 17, N. Y. 1949 1

Manitoba Annual Report

This mimeographed report is a chronicle of the business activities of the Veterinary Association of Manitoba at its 59th annual meeting at Winnipeg, Jan. 14, 1949. After listing the veterinarians who registered, the report presents the complete address of the president, the report of the secretary-treasurer, and of the registrar, a condensation of the discussions held during the business meeting, the results of the election of officers for the ensuing year, and then the complete text of each paper presented on the scientific program.—[Proceedings of the Veterinary Association of Manitoba, 59th Annual Meeting, Winnipeg, Jan. 14, 1949. J. M. 1sa, Secretary-Treasurer. 34 pages. Paper. Mimeographed.]

1949 Campaign Report

This is the report to the Board of Trustees and the House of Delegates of the American Medical Association by the coordinating committee of the National Education Campaign. The purpose of the campaign is to conclusively defeat legislation which would establish a system of compulsory health insurance and to avoid entering a status of socialized medicine.

The campaign committee, which is headed by E. L. Henderson, M.D., contends that voluntary health insurance plans are available and the service

which they render can be improved as well as their availability being broadened more economically and more effectively than under the proposed new plan. Blue Cross, Blue Shield, and commercial insurance companies are among the voluntary health insurance plans which are backing the campaign of this committee of the American Medical Association.—[1949 Campaign Report. By the Coördinating Committee, National Education Campaign, American Medical Association. E. L. Henderson, Chairman. 1949.]

Fighting Flies

This booklet, which discusses fly control from the standpoint of using chemicals, and particularly methoxychlor, lists some of the flies which may be controlled with chemicals and sanitation. It also discusses the places in which the substances may be used and the proper equipment for using them most effectively.—[New Help to Fight Flies, 16 pages. Paper. E. I. du Pont de Nemours & Co., Inc., Wilmington 98, Del. 1949. Free.]

Swedish Veterinary Medical Institute

This volume incorporates the collected papers from the State Veterinary Medical Institute at Stockholm, Sweden, during 1947. Seventeen papers are bound into this one volume, and a number of well-known authors are represented in the writers. The papers cover a wide range of subjects from canine distemper to omasal carcinoma in sheep, diseases of calves, parasitic infections, physiologic autoisoantibodies in horse blood, the errors in the Brucella abortus test, and many other subjects. Many of these papers carry English summaries. [Papers from the State Veterinary Medical Institute at Stockholm, Sweden. Issued by Almqvist & Wiksells, Boktryckeri, AB, 485607, at Upsala. 1949.]

The Complete Book of Home Pet Care

Panegyric as it may seem, readers will have to grade this book with the outstanding veterinary literature of this period, notwithstanding, as its title frankly declares, that it was written for the sole purpose of improving the well-being of the various creatures man adopts to brighten his own home life-birds, fishes, turtles, frogs, snakes, alligators, salamanders-their care, feeding, reproduction, pathology, and therapeutics which are beyond the bournes of the usual veterinary curriculum. What we do not know about the intimate needs, for example, of the fishes we incarcerate in bowls is truly amazing. That's why Whitney's book will come to the rescue of a lot of suffering pets. It will enable the general practitioner to answer embarrassing questions in his line of duty. Starving turtles, goldfish, and chameleons is a weird sort of entertainment. On the other hand, the reviewers will be obliged to praise this book for its good English and its coherence. It is pleasant to review

a new veterinary book that is grammatically and rhetorically excellent, and has its material coherently organized.

The author (may we say) has beautifully outsmarted us by writing confidentially to the petanimal keeper and then crammed the text with a stockpile of currently exotic facts that we ought to, but do not, know any too well to score high as experts on animalia.

The opening blast, a two-page tabulation of 29 general symptoms telling how to translate them into a probable diagnosis, contains many a provocative hunch for the nonspecializing doctor, and obviously goes far over the head, if not the curiosity, of the average pet owner. As a matter of fact, the entire book is a big contribution to the profession's literature.

The 43 pages devoted specially to cats is a strong competitor to Hamilton Kirk's celebrated book on the feline pet. The doctor none too well informed on cat practice will appreciate this abridgment of the subject.

Aside from the odd pets previously mentioned, attention is given to rabbits, guinea pigs, hamsters, mice, rats, raccoons, and skunks. The bird section includes canaries, doves, parrots, pigeons, and crows, with consideration of their care and diseases.

Each of the principal divisions (dogs, birds, cats, fishes) has an addendum titled "Fifty Questions Frequently Asked." The answers make up a summary of what the book contains.

To repeat, here is a book of the upper bracket on clinical veterinary medicine of great value to laymen who have a flair for the science involved in the care of their pets.—[The Complete Book on Home Pet Care. 1st ed. By Leon F. Whitney, D.V.M. 552 pages, Illustrated, Doubleday & Company, Inc., The Country Life Press, Garden City, N.Y. 1950. Price \$4.95.]

Neoplasms of the Dog

As the foreword indicates, "Thorough knowledge of the pathologic anatomy of any disease must be the basis not only for the use of established successful therapy, but also for intelligent experiment when curative therapeutic procedures have not been developed." Because dogs are living longer, they are presented to veterinarians for a diagnosis and treatment of a considerable variety of neoplasms.

This book describes the more common tumors in the dog, possible etiologic factors and treatments. The various types of tumors are discussed in eight separate chapters, and these are followed by a technical supplement and a bibliography as well as an index. It is a text which will be very helpful to veterinarians interested in, oworking with, the neoplasms of the dog.—[Neoplasms of the Dog. By R. M. Mulligan, M.D. Cloth, 135 pages. 194 illustrations in 59 plates. Many photomicrographs. The Williams & Wilkins Co., Baltimore, Md. 1949. Price \$4.00.]

Invited and Conquered

This book by Dr. I. Arthur Myers, well known for his fruitful studies of human and animal tuberculosis, documents the tragic origin, the development, and the fight against the great white plague in Minnesota. It goes back to the pre-Civil War days when consumptives, advised to go to the Territory of Minnesota to improve their health, scattered the infection among the Indians and the white settlers and their domestic animals. When the nature of the disease had been clarified and no way to conquer it was known, as the author puts it, "tuberculosis was so widespread both among animals and people that the entire future of Minnesota lay in the balance." The generous support of the citizenry enabled physicians and veterinarians to wage the most systematic and productive campaign against tuberculosis in this country. What this disease did to the people and their domestic animals, from the fur-seeking adventurers of Louis XIV down to the present population, plus the efforts made to conquer it, is the theme of this remarkable volume.

The veterinary profession has long realized that Minnesota pioneered in the fight against bovine tuberculosis, but few of us are aware that in 1886, four years after the tubercle bacillus was discovered and two years after the U.S. BAI was founded, the Minnesota Board of Health asked the federal government to investigate bovine tuberculosis in that state and, in 1891, before tuberclin came into general use, the Board declared "that tuberculosis in milk cows demands serious consideration in its relation to milk, particularly in infants and young children".

Here, the veterinary medical service gets its first decoration for barring the sale of milk from tuberculous cows. The place was Minneapolis, the veterinarian in charge was Dr. Charles E. Cotton acting for the city board of health, and the time was 1894. Three years later (1897), the veterinarians of the state founded a society "for improving legislation and diffusing knowledge concern-ing tuberculosis of cattle." By the end of the century, physicians and veterinarians of Minnesota took a firm stand against tuberculosis from which they never retreated. Leading participating veterinarians were Drs. Cotton, Lambrecht, Lyford, Gould, Brimhall, Price, Reynolds, Adamson, Ward, Youngberg, and others. As their work was backed by Dr. D. E. Salmon, chief of the U.S. Bureau of Animal Industry, these men were the vanguard that led other cities to follow suit and, finally, to national tuberculosis eradication.

The book is a compilation of facts related to the conquest of tuberculosis in man and animals. Speaking only of the veterinarians' side of the picture, the exactitude of the text is astounding. A veterinarian's library without this book has a great big gap.—Ilwited and Conquered. By J. Arthur Myers, Ph.D., M.D., University of Minnesota Medical and Graduate School. 738 pages. 1949.Webb Publishing Company, St. Paul. Price not given.

THE NEWS

Eighty-Seventh Annual Meeting Miami Beach-August 21-24, 1950

Plans Well Under Way

"We're proud and happy that Florida has been selected for the 1950 AVMA convention, and we're sincerely hoping to make this the best meeting you've ever attended. Please consider this your personal invitation to be with us in Miami Beach, August 21-24."

5/E. D. CLAWSON, Chairman Committee on Local Arrangements.

The great amount of work already done and the plans now being shaped for this meeting are graphic evidence that Dr. Clawson and all other members of the Committee on Local Arrangements are driving hard to organize "the best meeting you've ever attended." Registration may be larger or it may be smaller than that of previous conventions—nobody can forecast that yet. But one

thing is sure: There will be nothing short on quality, both of program and entertainment, and the unbeatable scenic and recreational facilities of Miami Beach will provide an inspiring setting for the many-sided activities of this important event.

Members of the Committee on Program are doing their full share, too, in planning a literary schedule that will pay due attention to everything that is significant and progressive in all branches of veterinary medicine. Detailed announcement of the names of speakers and their subjects will be withheld until all sections have completed their plans, but following are a few samples of what can be expected:

The Section on Poultry will present a complete story of new developments in that field, including the use of radioisotopes in poultry research.



-Miami Bosch Nous Bureau

Comfortable craft ply the inland waterways at Miami Beach, enabling visitors on sight-seeing trips to view the miles of beautiful palm-bordered banks, with their wide spreading lawns, their handsome residences, pelatial hotels, and apartment houses.

The Section on Public Health will headline its program with a panel discussion on rabies eradication and another panel on miscellaneous veterinary public health problems.

The Section on General Practice plans to give special attention to problems of the southeastern area. A discussion of x-ray and radium treatment also will be among the high-lights of this section's proceedings.

The Section on Small Animals will center attention on parasitic conditions prevalent in the southeastern states and on orthopedic problems,

The Section on Surgery and Obstetrics will cover all the fields of veterinary surgery and has announced plans for presenting a critical evaluation of the possible importance of ova implantations.

EXHIBITS

Exhibits of leading commercial suppliers and educational agencies will attract a much-deserved share of the convention crowd's time and interest. A generous allotment of space in the new, airconditioned municipal auditorium (the convention headquarters) insures adequate and excellent facilities for all displays. A large number of firms already have signified their intention to exhibit, and arrangements are being made for numerous educational exhibits, including several depicting principal disease problems of the southeastern area.

GOLF TOURNAMENT, SKEET SHOOT PLANNED

Golfers (and everybody who enjoys watching keen competition in sports) will welcome the Local Committee's announcement that the AVMA Golf Tournament will be reopened at Miami Beach. This convention tournament was inaugurated at Indianapolis in 1941, staged again at Chicago in 1942, and then discontinued during the war years. Teams representing constituent associations will compete for top honors, the winning team receiving the AVMA golf trophy. Another phase of the tournament will be individual matches to single out the champion golfer of the 1950 convention. And, if the ladies be willing, they will have their own special tournament. In addition to the trophy, prizes will be awarded in all classes of competition.

Tentative plans also include a skeet shoot. Interest of enough members is all that is needed to put it on the entertainment schedule. Those interested in organizing such an event are urged to communicate with the Association's Chicago office or with the chairman of the entertainment committee, Dr. J. H. Yarborough, 2635 N.W. 36th St. Miami 37, Fla.

Facts About Miami Beach

Interest in the forthcoming convention is running high among veterinarians and their families. Not only the always-large numbers who regularly support AVMA meetings, but also many who never before have been able to attend, are counting this annual gathering in their summer plans. The relaxing atmosphere and diversified summer attractions of the Miami-Miami Beach area are behind the decision of many to merge their convention plans



-Miami Beach News Bureau

AVMA golfing fans will find planty of pleasure on the beautiful but tricky 18-hole links of the two city-owned golf courses, Bayshore and Normandy Isle, at Miami Beach.

with a sight-seeing vacation tour. Because so many inquiries have been coming in to the AVMA office for information about the convention area, some of the questions asked most frequently are reproduced below with answers, for the guidance of all:

What is the average August temperature at Miami Beach?—Taking August 20 as a representative date (since this is the date most people will arrive for the meeting), the U.S. Weather Bureau gives these average temperatures for that date for the past five years:

Degrees	97 . 1		54
legrees	POD	reni	nen

	The second of the second							
Year	High	Low	Average					
1945	84	76	80					
1946	85	76	80					
1947	84	80	82					
1948	88	72	80					
1949	90	78	84					

The Bureau further reports that 82 is the normal average temperature for August 20 and that the variation from day to day through August probably will not be greater than one-half degree above or below this average figure. Direct rays of the sun are hot, but in the shade the air is tempered to a refreshing and comfortable degree by the ocean breezes.

Are the summer hotel rates as reasonable as claimed?—Yes. Summer rates at even the most luxurious ocean-front hotels are generally lower than accommodations at hotels in other convention cities. Members will be impressed by the fact that the hotels are invitingly clean, well kept, and freshly decorated. (Watch the next issue of the JOURNAL for more information about hotels and housing.)

How do hay fever sufferers fare in Miami Beach?—Miami Beach is practically free of ragweed pollen, affording relief to hay fever sufferers. Moreover, because this city has no railroads or coal-burning furnaces, the air is free of soot.

Is a private automobile necessary for sightseeing?—No. In fact, because most of the palatial homes face toward inland waterways in the Miami-Miami Beach area, a trip by auto is likely to show the casual visitor only what residents consider the rear of their homes. Excursion craft (p. 250) offer sight-seeing trips that last about three hours and give visitors a frontdoor view of showplaces in the area. Also, public transportation is readily available between Miami Beach and Miami, the two cities being linked by a causeway over which buses and other vehicles travel.

County Agricultural Agents and Veterinarians

The report of the Livestock Committee of the National Association of County Agricultural Agents, which met Oct. 5, 1949, opens with the following statement, "County Agents agree that it is a wise and practical policy to work with organized groups who have as their objectives the improvement of some phase of agriculture,"

It continues, "In recognition of the very fine relations that we have enjoyed with the American Veterinary Medical Association, our Committee was represented at the National AVMA convention in Detroit."

The report discusses the conference which was held between Mr. J. D. Potts, assistant county agent of Wayne County, Michigan, and Dr. A. H. Quin, chairman of the AVMA Public Relations Committee, and Dr. C. Don Van Houweling, director of professional relations of the AVMA.

The general impression from this report seems to be that, at the upper level, cordial and effective relations have been established. It remains now for this spirit to be carried down to state and local levels by action of the several state veterinary medical associations with the state associations of county agents and the vocational agricultural teachers; and even beyond that, in the individual community, by contact between the veterinarian and the county agent who operates in his practice area.

Dr. Blood Heads Pan American Public Health Section

The Pan American Sanitary Bureau (PASB), regional office of the World Health Organization, has created a veterinary public health section to promote national programs in the several veterinary aspects of public health and to coördinate the international phases of such programs.

The public health veterinarian is concerned with preventing, controlling, and eradicating animal diseases transmissible to man, and with preventing the spread of human disease by contaminated foods of animal origin.

Deadline Near for 1950 Dues

If you have not paid your 1950 dues, don't delay any longer. The deadline is April I, and failure to pay by that time will automatically cause your name to be removed from the JOURNAL mailing list as required by postal regulations and the By-Laws. Prompt payment of dues avoids the annoyance of having your JOURNAL subscription interrupted, even temporarily, and greatly facilitates the work of the AVMA office.

In the beginning, the Veterinary Public Health Section will be concerned mainly with a coördinated international fight against rabies, brucellosis, and hydatid disease (prevalent in South American countries). The new section of PASB has inaugurated an international campaign of rabies control along the United States-Mexican border. Recently, technicians from Mexico, headed by Dr. Gerardo Varela, director of the Institute of Tropical Medicine of Mexico City, came to the United States under the auspices of the PASB to study the lastest methods developed by the U. S. Public Health Service in the control and diagnosis of rabies.

Dr. Benjamin D. Blood (COLO '39), head of the new section, served three and one-half years with the U. S. Air Force in Europe during World War II, where he supervised the veterinary food inspection services. At the end of the war, he was transferred to Washington, D. C., and made chief veterinarian of the Air Force with the rank of colonel. In 1946, Dr. Blood went to Korea as a civilian consultant, where he organized the veterinary service of that country and founded the first college, of veterinary medicine in Korea. Upon terminating graduate studies in the Harvard School of Public Health, he joined the PASB staff to carry out the program of the new Veterinary Public Health Section.

STUDENT CHAPTER ACTIVITIES

Successful Practice Booklet for Seniors.—
"Forewords to Successful Practice," a booklet prepared by the AVMA Committee on Public Relations for the guidance of graduating members of student chapters, is distributed each spring to graduating seniors only. Arrangements for distribution are made through the college dean, and students are urged not to write to the AVMA office for individual copies. Such individual requests cannot be acknowledged or filled.

Ohio Chapter.—At the Nov. 26, 1949, meeting of the Ohio State Student Chapter of the AVMA, Dr. Jack Knappenberger, Westerville, discussed the practical aspects of veterinary medicine, stressing service and sanitation as invaluable aids in conducting a successful practice.

The following officers were elected at the December 7 meeting: Hal E. Deal, president; Mark E. Davenport, vice-president; Thomas W. Freas, secretary; and Charles F. Reed, treasurer. Jesse C. Curtis was appointed program chairman for the rest of the year. Mr. Charles Blackman, dairy extension specialist, told of his experiences as a federal dairy representative to Colombia, South America, stressing points of interest to a veterinarian. His talk was highlighted with colored slides which were both scenic and educational.

"How to Get Along with People" was guest speaker A. B. Graham's topic at the January II meeting. Mr. Graham is active in state and national 4-H work.

S/NORMAN SAX, Publicity Chairman.

Pennsylvania Chapter.—On Dec. 13, 1949, Dr. Otto Stader addressed the University of Pennsylvania Student Chapter of the AVMA, explaining and elaborating on the internship requirement in the state. There was an open forum afterward, during which many pertinent questions regarding the requirement were discussed. President Biscotte presided; Vice-president Ames introduced Dr. Stader and conducted the forum.

S/RICHARD S. MACKENSEN, Secretary.

WOMEN'S AUXILIARY

Plans for Miami Beach Meeting.—Plans are being developed for the Women's Auxiliary annual business sessions and entertainment for the meeting to be held August 21-24 in Miami Beach, Fla.

We are fortunate to have as third vicepresident of the Women's Auxiliary, Mrs. C. E. Bild, 890 N. E. 98th St., Miami, 38, Fla., for, as outlined in the new constitution the third vicepresident "shall be directly responsible for the annual meeting, being the liaison officer from the executive board to the local committee." It



Mrs. C. E. Bild

is not often our third vice-president resides in the community in which the national convention is to be held, and so she is not always able to take so active a part in making the arrangements for the national convention as our third vice-president is now doing. Mrs. Bild is a capable, energetic member of the Women's Auxiliary Executive Board, and we are assured the program in Miami Beach will be well planned to the most minute detail.

s/(MRS. V. H.) FLORENCE MILLER, President.

Southern Illinois Auxiliary.—A new auxiliary was organized in Centralia, Ill., Dec. 7, 1950—the Auxiliary to the Southern Illinois Veterinary Medical Association. Mrs. W. J. McIntosh of Mt. Carmel was elected president, Mrs. T. M. Wise, Effingham, vice-president; Mrs. F. L. Puckett, Mt. Vernon, secretary; and Mrs. L. A. Hill, Highland, treasurer. Mrs. C. H. Horstman was elected sponsor of the group.

5/MRS. F. L. PUCKETT, Secretary.

Indiana Auxiliary.—The Women's Auxiliary to the Indiana Veterinary Medical Association had an outstanding meeting this year, the Auxiliary joining the Association in the opening session January 12. Mrs. C. Harvey Smith, president, gave a short welcome.

A mixer was held the opening night in the Rainbow Room of the Hotel Severin with Mrs. S. F. Gaynor of Logansport in charge.

The annual luncheon, held at the Warren Hotel on January 13, with 90 ladies present, was followed by the business meeting, with Mrs. C. Harvey Smith, president, presiding. Mesdames L. L. Bechtol and R. J. Hoskins were co-chairmen of the luncheon. We were pleased to hear from Mrs. C. L. Miller, secretary of the Women's Auxiliary to the AVMA. A report of the AVMA meeting in Detroit was given by Mrs. R. E. Kepner of New Castle.

During the business meeting, the following officers were elected for the ensuing year: Mrs. Roy W. Elrod, Indianapolis, president; Mrs. C. R. Baumgartner, Spencerville, first vice-president; Mrs. R. J. Hoskins, Indianapolis, second vice-president; Miss Maxine Musselman, Denver, secretary; Mrs. E. S. Weisner, Goshen, treasurer; Mrs. L. A. Clark, Bedford, historian; Mrs. Meade Hamilton, Muncie, parliamentarian; Mrs. C. C. Donelson, Thorntown, representative to the National Auxiliary; Mrs. D. D. Baker, Indianapolis, alternate.

Following the business meeting, an informative lecture on "Decorative Fabrics" was given by Mrs. Hollingsworth of the L. S. Ayres Co.

The following day, Mrs. Henry F. Schricker, wife of the Governor, entertained the Women's Auxiliary for tea at the Governor's mansion in honor of our president, Mrs. C. Harvey Smith. Mrs. Schricker was joined in the receiving line by Mrs. Smith and her officers, Mrs. R. E. Elrod, vice-president; Mrs. E. D. Wright, secretary; Mrs. Wayne Alter, treasurer; Mrs. R. E. Kepner, representative to the National Auxiliary; and Mrs. G. R. Oldham. Mrs. D. D. Baker, Indianapolis, was general chairman for the tea. Among those presiding at the tea table were Mrs. C. L. Miller, secretary of the Women's Auxiliary to the AVMA, and past presi-

dents of the Indiana Auxiliary, Mesdames O. B. Curry, L. A. Clark, and H. W. Demsey.

The annual banquet and dance was held January 14.

5/(MISS) MAXINE MUSSELMAN, Secretary.

Iowa Auxiliary.—On Jan. 17-19, 1950, the Women's Auxiliary to the Iowa Veterinary Medical Association met in the Hotel Fort Des Moines, Des Moines, with an approximate attendance of 300. The entertainment committee, of which Mrs. K. H. Gubser was chairman, planned a program of varied activities which included a luncheon, discussions on "Clothes for the Average Woman" and "Theory and Modern Harmony," a breakfast, and the annual banquet.

s/Mrs. R. W. Johnson, Secretary.

Maine Auxiliary.—The first meeting of the newly organized Women's Auxiliary to the Maine Veterinary Medical Association was held on Jan. 11, 1950, at the Hotel DeWitt, Lewiston. Mrs. A. E. Freeman of Rumford, a member of the nominating committee, presented the following officers who were elected: Mrs. Raymond E. Libby, Richmond, president; Mrs. Lewis B. Denton, Dover-Foxcroft, president-elect; Mrs. James A. Elliott, Bangor, vice-president; Mrs. Stanford D. Merrill, Augusta, secretary-treasurer.

Members of the Maine auxiliary executive board are Mrs. Alfred E. Coombs, Skowhegan, chairman; Mrs. J. Frank Witter, Orono; and Mrs. Edward C. Moore, Lewiston.

During the evening, Mrs. Raymond Libby read an interesting and informative paper on the Georgia Foundation.

The president appointed the officers and executive committee to arrange a program for the next meeting to be held in April.

s/(Mrs. Stanford D.) Evellyn Merrill, Secretary.

Minnesota Auxiliary.—After the business meeting of the Women's Auxiliary to the Minnesota Veterinary Medical Society at the Hotel St. Paul, Jan. 16-18, members enjoyed a coffee party and entertainment, a luncheon, style show, and the banquet.

s/Mrs. L. E. Jenkins, Corresponding Secretary.

Mississippi Auxiliary.—The second business meeting of the Auxiliary to the Mississippi Veterinary Medical Association was held January 17, during the Tri-State meeting in Memphis, Tenn. The following officers were elected, Mrs. J. P. Carney, Meridian, president; Mrs. Glen Gates, Clarksdale, vice-president; Mrs. S. A. Cox, Jackson, secretary-treasurer. Changes were made in the constitution for more efficient functioning of the new organization, and the secretary reported 27 members and a treasury of \$54. Mrs. V. H. Miller was present at this meeting. s/Mrs. V. H. MILLER, President

S/MRS. V. H. MILLER, President Women's Auxiliary to the AVMA.

Missouri Auxiliary.-The Women's Auxiliary to the Missouri Veterinary Medical Association met Oct. 31. 1949, at 12 o'clock for luncheon at the Daniel Boone Hotel, Columbia, with 74 members and guests present. Mrs. Carl Wank, treasurer of the St. Joseph auxiliary, and Mrs. E. F. Ebert, president of the Kansas City auxiliary, told of the work of their organizations. Mrs. A. E. Bott, president of the international auxiliary, reported on the international meeting in London. The following nominating committee was appointed by President Mrs. E. G. Bailey to serve for 1950; Mrs. F. E. Suits, chairman; Mrs. H. D. Rodabaugh, and Mrs. E. W. Millenbruck.

Entertainment included three vocal solos by Lisle Wells, son of Dr. and Mrs. J. L. Wells, and the verse speaking choir of the Hickman High School.

s/Mrs. C. D. LUECKERT, Secretary.

Ohio Auxiliary .- The meeting of the Auxiliary to the Ohio Veterinary Medical Association was well attended. The program consisted of a mixer with cards and television, a luncheon, and the annual banquet and dance. One hundred and forty-two women were present for the luncheon held in the Hall of Mirrors of the Deshler-Wallick hotel in Columbus. An unusually entertaining program was provided by Mrs. Elizabeth Kardos, fashion stylist from Cleveland. At the business meeting, the following officers were elected: Mrs. Allan Fogle, Columbus, president; Mrs. Vernon Tharp, vice-president; Mrs. Chas. Griffin, secretarytreasurer. Mrs. V. H. Miller, president of the Women's Auxiliary to the AVMA, gave a talk on the activities of the Auxiliary.

S/MRS. VERNON THARP. Secretary.

Tennessee Auxiliary.-The Auxiliary to the Tennessee Veterinary Medical Association met in Memphis, Jan. 16, 17, 1950, at the Peabody Hotel, in a joint meeting with the auxiliaries of Mississippi and Arkansas. This meeting was held in conjunction with the veterinary associations of the above named states at the Tri-State Convention.

The members of the auxiliaries were entertained with a luncheon, at which time there was a fashion show, and Mrs. Dennis Coughlin, president-elect of the Auxiliary to the AVMA, spoke on the importance of auxiliary work.

On Tuesday morning, the three auxiliaries met again for a breakfast. We were fortunate to have with us at that time Mrs. V. H. Miller, president of the National Auxiliary and Mrs. A. E. Bott, president of the newly organized International Women's Auxiliary to the Veterinary Profession. Mrs. Miller spoke on the purpose and aims of the Auxiliary, and Mrs. Bott gave a brief résumé of her trip abroad. Mrs. Bott stressed the importance of an understanding among veterinarians of all lands, and what it could do to help maintain peace throughout

After the breakfast, the auxiliaries held their respective business meetings. The Tennessee auxiliary voted to continue its help to the library at the College of Veterinary Medicine. Auburn, Ala. Mrs. H. W. Flayes, of Knoxville, gave an interesting report on the Detroit meet-The following officers were elected for 1950: president, Mrs. A. C. P. Anderson, Nashville: vice-presidents, western district, Mrs. H. W. Connaughton, Fulton, Ky.; middle district, Mrs. Ray Gathman, Franklin; eastern district, Mrs. H. W. Hayes, Knoxville; secre-tary, Mrs. Hugh L. Lamb, Athens; and treasurer, Mrs. W. O. Greene, Nashville,

B/(MRS. HUGH) DIXIE LAMB, Secretary.

Texas Auxiliary .- A varied and interesting program including a get-together, bus tour of the city, luncheon, games, buffet dinner, and dance was enjoyed by members of the Women's Auxiliary to the State Veterinary Medical Association of Texas at their annual meeting in the Galvez Hotel, Galveston, Jan. 22-24, 1950. Mrs. Sidney Kay was in charge of entertainment.

APPLICATIONS

The listing of applicants conforms to the requirements of the administrative by-laws-Article X.

First Listing

APPLETON, WAYNE

Box 133, Ashland, Ill. D.V.M., Kansas State College, 1942. Voucher: A. G. Misener.

BUITRAGO G., EDUARDO
Lab. de Investigaciones Vet., Finca Nal., "La
Aurora", Guatemala City, Guatemala,
D.V.M., National School of Veterinary Medi-

cine, Bogota, 1948.
Vouchers: E. Estrada and F. R. Rodas Calderon.
Burson, W. M.

245 Oakland Ave., Athens, Ga. D.V.M., Cincinnati Veterinary College, 1907.

D.V.M., Cincinnati Veterinary College, I Voucher: C. C. Rife. Bush, Thomas C., Jr. 618 12th Ave., E, Cordele, Ga. D.V.M., Alabama Polytechnic Inst., 1948.

Voucher: C. C. Rife.

CHILDRESS, G. I. Roodhouse, Ill.

D.V.M., Iowa State College, 1945. Voucher: A. G. Mischer. Crenshaw, Walter E.

Rt. 2. Box 277 A, Weslaco, Texas. D.V.M., Texas A. & M. College, 1946. Voucher: E. A. Grist.

COURNOYER, LUCIEN

5435 Bourbonniere St., Montreal 36, Oue. D.V.M., Quebec School of Veterinary Medicine,

1948.

Voucher: P. Villeneuve.

DAVISSON, LEE

State Veterinarian's Office, Room 720, State Office Bldg., Lansing 13, Mich.

M.D.C., Chicago Veterinary College, 1910. Voucher: B. J. Killham.

DINER, NEDIM 3431 Walnut St., 3rd Rear, Philadelphia, Pa D.M.V., Agricultural College of Ankara, 1937. Vouchers: E. L. Stubbs and R. J. Maloney. Dodd, Paul S.

1210 N. Franklin St., Danville, Ill. D.V.M., Indiana Veterinary College, 1918. Voucher: A. G. Misener.

Voucher: A. G. Brischer.

Evenson, George E.
West Salem, Wis.
D.V.M., Chicago Veterinary College, 1918.

Voucher: B. A. Beach.

FIEVET, CHARLES E.

Box 41, Swainsboro, Ga. D.V.M., Alabama Polytechnic Institute, 1944. Voucher: C. C. Rife.

FLETCHER, P. C.

Hotel Geneva, Geneva, Ill. D.V.M., Ohio State University, 1922. Voucher: A. G. Misener.

GILLESPIE, ANDREW 6031 Wentworth Ave., Chicago, Ill. D.V.M., McKillip Veterinary College, 1915. Voucher: A. G. Misener.

HILL, CHARLES P. University of Georgia, School of Veterinary Medicine, Athens, Ga. D.V.M., Alabama Polytechnic Institute, 1943.

Voucher: C. C. Rife.

HUDSON, PERCY W.
2614 Napier Ave., Macon, Ga.
D.V.M., Alabama Polytechnic Institute, 1909.
Voucher: C. C. Rife.

JACOBSON, HARVEY W.

Denmark, Wis. D.V.M., Chicago Veterinary College, 1917. Voucher: B. A. Beach.

KASSIRER, A. L. D.V.M., Ontario Veterinary College, 1948. Voucher: G. A. Edge.

LOCKE, ALBERT H. Box 12, Magnolia, Del. D.V.M., Alabama Polytechnic Institute, 1940.

Voucher: E. L. Symington. McDermid, Joseph E. 802 Worden Ave., E., Ladysmith, Wis. D.V.M., Indiana Veterinary College, 1921. Voucher: B. A. Beach.

Nelson, Myron A.
Alden, Minn.
D.V.M., Iowa State College, 1949.
Voucher: H. C. H. Kernkamp.

OGILVIE, ROBERT A.

206 W. Main St., Mount Horeb, Wis.
D.V.M., Chicago Veterinary College, 1918. Voucher: B. A. Beach.

Ross, T. C. Mc Rae, Ga. D.V.M., Alabama Polytechnic Institute, 1940. Voucher: C. C. Rife.

ROUKEMA, EDWARD (511 New Federal Bldg., Atlanta 3, Ga. D.V.M., Alabama Polytechnic Institute, 1940. Voucher: C. C. Rife.

SPIERS, P. M. Sandersville, Ga. D.V.M., University of Georgia, 1928. Voucher: C. C. Rife. TORNES, W. A.
4839 E. New York St., Indianapolis, Ind. D.V.M., Ohio State University, 1943. Voucher: W. W. Garverick. WRIGHT, DONALD W.

Westfield, Wis. D.V.M., McKillip Veterinary College, 1917. Voucher: B. A. Beach.

Second Listing

COMFORT, COLIN F., 39 Fairview Ave., London, Ont. GEORGE, FRANK H., Plain City, Ohio, PETERS, MAX R., Redkey, Ind. RELKEN, WALTER E., 138-46 Horace Harding Blvd., Flushing, N. Y. THOMPSON, PAUL L., 321 E. South St., Freeport, 111

U. S. GOVERNMENT

Revisions in Schedule of Laboratory Courses. The schedule of public health laboratory courses given by the Communicable Disease Center, Atlanta, Ga., for 1950 (JOURNAL, Jan. 1950, p. 75) is revised as follows.

8.50-8 An additional one-week course in laboratory diagnosis of enteric diseases, introductory enteric bacteriology, will be given March 20-24, 1950.

8.55-8 An additional two-week course in laboratory diagnosis of tuberculosis will be given Dec. 4-15, 1950.

8.55-8 The previously announced three-week course in the laboratory diagnosis of tuberculosis will be given Aug. 21-Sept. 7, 1950.

8.75-8 An additional one-week course in serologic diagnosis of rickettsial diseases will be given Nov. 6-10, 1950.

. . . Veterinary Personnel Changes .- The following changes in the force of veterinarians in the U.S. Bureau of Animal Industry are reported as of Nov. 9, 1949, by Dr. W. A. DeVaughn, personnel officer.

James S. Knox from Jefferson City, Mo., to Mexico City, Mex.

Chas. M. Barnes from Mexico City. Mex., to Baton Rouge, La.

John B. Healy from Little Rock, Ark., to Beltsville, Md.

John R. Burns from Chicago, Ill., to Dubuque, Towa.

Howard H. Ingram from Mexico City, Mex., to Beltsville, Md.

Robert J. Donohue from Seattle, Wash., to Portland, Ore.

RESIGNATIONS

Seymour D. Nord, Newark, N.I. Charles P. Ross, Baltimore, Md. DePaul J. Corkbill, Mexico City, Mex. William J. Hayden, Portland, Ore.

SEPARATION

Carlton P. Marcus, Washington, D. C.

RETIREMENT

Edwin R. Jackson, Baltimore, Md.

DEATH

Stanley C. Brown, Dayton, Ohio.

AMONG THE STATES AND PROVINCES

Arizona

State Officers.—Dr. F. H. Olvey, Phoenix, was elected president of the Arizona Veterinary Medical Association at the annual meeting of the association in Phoenix on Jan. 4-5. Other officers are Drs. Paul McQuown, Tucson, vice-president; and Chas. A. White, Mesa, secretary-treasurer.

s/Chas. A. White, Secretary.

Arkansas

State Officers.—At the business meeting of the Arkansas Veterinary Medical Association, held during the Tri-State Conference in Memphis, Tenn., Jan. 16-17, 1950, the following officers were elected: Drs. Willard C. Brooks, Prairie Grove, president; H. Robert Shay, Texarkana, vicepresident; and James A. Pulliam, Jonesboro,

secretary-treasurer.

New members admitted to the Association at this time are Drs. Paul B. Doby, Fayetteville; Herbert Rogers, Hope; and Charles Edgar Phillips, Little Rock. A special committee on policy was elected, representing the various sections of the state, to work with other organizations for improvement of regulatory and disease control laws, and to write a new constitution and by-laws for the state association. Members of this committee are Drs. Wm. R. Jackson, Rogers; Robert E. Fahr, Paragould; Orris W. Nipper, Texarkana; John C. Smith, Stuttgart; Fred Thompson, North Little Rock; Joe S. Campbell, Little Rock; and the officers of the Association.

s/T. D. HENDRICKSON, Resident Secretary.

California

Examination for Parasitologist.—On April 6, 1950, an examination for parasitologist will be given in Sacramento, San Francisco, Los Angeles, and other places in the state if the numbers of candidates warrants and conditions

permit.

Applicants must be citizens of the United States, residents of California for at least one year prior to examination, and must be graduates of an accredited veterinary college or graduates from college with major in the zoologic sciences and specialization in parasitology. Two years experience in work with parasitic diseases, including those that are vector-borne of birds and mammals, are required. One year of graduate work in parasitology, wildlife management, animal ecology, public health, or a

similar field may be substituted for not more than one year of the required experience.

The salary range is \$341 to \$415, and March 16 is the final date for filing applications. Further information and applications (form 678) may be obtained from the State Personnel Board, Sacramento, San Francisco, Los Angeles, and any local employment office.

Connecticut

Fairfield County Association.—On Jan. 11, 1950, Dr. David Coffin, of the Angell Memorial Animal Hospital in Boston, discussed "Leptospirosis and Infectious Canine Hepatitis" (with illustrations) at a meeting of the Fairfield County Veterinary Medical Association at Rudy's Restaurant in Fairfield. This was followed by a motion picture on ear cropping.

5/WILLIAM R. LEGGETT, Secretary.

Georgia

Southern Association.—The South Georgia Veterinary Medical Association held its quarterly meeting at Radium Springs Hotel near Albany on Sunday afternoon, January 22, with 38 veteri-

narians in attendance.

Chairman Britt Phillips welcomed state association secretary, Dr. Charles Rife, and visitors, Drs. Whitfield, C. H. Poitevint, and R. C. Rackely, Jr., of Dothan, Ala., and Dr. Perry Culpepper of Marianna, Fla. Dr. Rife reported on the practice act and other association news. The business meeting was followed by a discussion of successful methods of bill collection. Drs. Rife, J. W. Byrd, G. O. Toliver, J. W. Salter, C. H. Poitevint, Perry Culpepper, C. C. Sapp, R. T. Stapleton, W. O. Young, J. R. Clanton, and others participated in the discussion.

After the meeting, a delicious buffet supper was enjoyed by the members and their wives.

s/W. S. SIPPEL, Secretary.

Illinois

Chicago Association.—At the regular meeting of the Chicago Veterinary Medical Association at the Palmer House, Jan. 10, 1950, Dr. Eugene F. Lutterbeck, who is on the staff of the Cook County Hospital in the Department of Radiology, discussed "The Present Status of Low Roentgen Radiation" (with illustrations).

Officers elected at this meeting are Drs. G. S. Elwood, president; C. L. McGinnis, Peoria, vice-president; Robert C. Glover, reelected secretary-treasurer; and Wayne Riser, representative, Ex-

ecutive Board of State Association.

S/ROBERT C. GLOVER, Secretary.

Indiana

State Officers.—Officers elected at the sixtysixth annual meeting of the Indiana Veterinary Medical Association in Indianapolis on Jan. 12-14, 1950, were Drs. C. Harvey Smith, Crown Point, president; G. Robert Oldham, Kokomo, presidentelect; M. M. Coble, Columbia City, vice-president; W. W. Garverick, Zionsville, secretary-treasurer; and J. L. Kixmiller, Indianapolis, resident secretary of the AVMA. Members of the Board of Directors and the associations they represent are Drs. E. W. Spieth, Jeffersonville, Ninth District; Frank Brown, Indianapolis, Central; Homer Carter, Fairmount, Wabash Valley; Paul H. Wallace, Cynthiana, South West; E. S. Weisner, Goshen, Michiana; M. E. Clark, Boston, Tenth District; L. E. Andres, Remington, North West; C. E. Haflick, Markle, North East; Roe King, Sheridan, Sixth District; and L. O. Fish, Spencer, Indiana-Illinois. 8/W. W. GARVERICK, Secretary.

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State Association.—Approximately 600 veterinarians registered at the sixty-second annual meeting of the Iowa Veterinary Medical Association in the Hotel Fort Des Moines, Des Moines, on Jan. 17-19, 1950. After President J. D. Shoeman's address, Dr. C. D. Van Houweling, director of professional relations of the AVMA, brought a message from the American Veterinary Medical Association. The program follows.

Dr. Harold Gunderson (Ph.D.), extension entomologist, Iowa State College, Ames: "The Effect of Insecticides and Weed Killers on Domestic Animals."

Dr. Charles W. Brown, veterinarian in charge, U.S. Bureau of Animal Industry, Des Moines: "Affairs of the BAL."

Dr. H. U. Garrett, chief, Division of Animal Industry, Des Moines: "Remarks on the Work of the Division of Animal Industry."

Dr. M. I. Johnson, associate professor, veterinary medicine, Iowa State College: "Diseases and Treatment of Feedlot Cattle."

Dr. Jack Cady, Arlington, Neb.: "Diseases of

Dr. S. H. McNutt, Department of Veterinary Science, University of Wisconsin, Madison: "Infertility of Cattle."

Dr. J. N. Campbell, in charge of veterinary clinics, University of Minnesota, St. Paul: "Metabolic Diseases of Dairy Cattle—The Clinician's Viewpoint."

Dr. A. F. Sellers, associate professor of physiology, Division of Veterinary Medicine, University of Minnesota, St. Paul: "Metabolic Diseases of Dairy Cattle—Research and Laboratory Associated"

Dr. Hadleigh Marsh, director, Veterinary Research Laboratory, Montana State College, Bozeman: "Diseases of Sheep."

Dr. V. L. Tharp, director of clinics, College of Veterinary Medicine, Ohio State University, Columbus: "Listeriosis and Rabies in Cattle."

Dr. R. J. Haxby, Clarinda: "Anemia and Pox in Swine."

Dr. Lester Proctor, Oelwein: "Swine Practice."
Dr. W. A. Aitken, Merrill: "Swine Erysipelas."
Dr. E. F. Sanders, Jensen-Salsbery Laboratories, Kansas City, Mo.: "Current Status of Nonviable Hog Cholera Vaccines."

Dr. R. M. Brown, Storm Lake: "Poultry

Dr. E. B. Ingmand, Red Oak: "Poultry Nutrition."

Dr. M. I. Thiele, Marshalltown: "Conducting a Small Animal and General Practice."

Dr. S. M. Paul, Clarence, conduced a forum on "All Phases of Veterinary Practice." Forum members were Drs. M. I. Johnson, Jack Cady, S. H. McNutt, A. F. Sellers, J. N. Campbell, V. L. Tharp, Harold Gunderson, E. F. Sanders, Lester Proctor, W. A. Aitkin, R. W. Brown, M. I. Thiele, E. B. Ingmand, C. H. Koll, and R. J. Haxbv.

New officers of the association are Drs. J. K. Dewar, Cherokee, president; C. D. Lee, Ames, president-elect; Lester Proctor, Oelwein, first vice-president; H. E. Hanna, Springdale, second vice-president; and Frank Young, Waukee, secretary-treasurer.

S/J. H. KRICHEL, Resident Secretary.

. . .

East Central Society.-At the dinner meeting of the East Central Iowa Veterinary Medical Society on Dec. 8, 1949, 44 veterinarians from 14 counties enjoyed a varied and instructive program which included a talk on hunting big game in Montana (with illustrations) by the Honorable Harry Linn, DesMoines; and a paper on "Trauma-tic Pericarditis of Cattle" by Dr. John B. Bryant, Mount Vernon (discussed by Dr. B. C. Lowther, Hopkinton; Allen J. Murphy, Winthrop; and Samuel G. Paul of Clarence). "Lightning Stroke and Electrocution of Animals" was discussed by Drs. V. M. Reinhart, Norway; P. V. Neuzil, Blairstown; H. N. Strader, Marion; Darrell T. White, Williamsburg; and Tom Bowstead, De-Witt. "Worming of Bred Gilts" was discussed by Drs. H. E. Hanna, Springville, and Joe W. Giffee, Cedar Rapids; and "Streptococcic Infection of Swine" by Drs. H. N. Strader, H. E. Hanna, Robert E. Savage, and S. G. Paul. Dr. Paul also discussed "Shipping Fever of Cattle." A case Report on "Streptomyces Bovis Infection of Purebred Aberdeen Angus Cattle" was given by Dr. V. M. Reinhart.

S/WAYNE H. THOMPSON, Secretary.

Kansas

State Association.—On Jan. 30 to Feb. 1, 1950, the Kansas Veterinary Medical Association held its forty-sixth annual convention in the Jayhawk Hotel in Topeka. The scientific program is presented here.

Dr. W. M. Coffee, La Center, Ky., presidentelect of the AVMA: "General Practice" (with illustrations).

Dr. Howard W. Johnson, Pathological Division, U. S. Bureau of Animal Industry, Washington, D. C.: "Recent Research and Field Findings Which Assist the Tuberculosis-Eradication Program."

Dr. R. D. Turk, head, Department of Veterinary

Parasitology, Texas A. & M. College, College "Internal Parasites of Ruminants" and "Animal Parasites and Control Measures" (with illustrations)

Dr. L. R. Phillips, Denver, Colo.: "Small

Animal Therapeutics.

Dr. W. J. Gibbons, head, Department of Surgery and Medicine, Alabama Polytechnic Institute, Auburn: "Sterility in Cattle" and "Problems in Cattle Practice.'

The Honorable A. G. Pickett, Kansas livestock sanitary commissioner, Topeka: "The Position of the Practicing Veterinarian in Disease Control."

Dr. Earl L. Mundell, Jen-Sal Laboratories, Kansas City, Mo.: "The Current Status of Hog Cholera Vaccines."

s/O. W. MORRIS, Secretary.

State Packing Plants Clean.-In 1948, 155,053 animals were slaughtered under state inspection in Kansas, producing a total weight of 37,382,-279 lb. of dressed meat at a cost per animal of 24.3 cents or of 0.1 cent per pound. Inspection is provided in 530 modern, well-equipped meat and poultry plants, employing 37 veterinarians. This is in direct contrast to the situation eight years ago, when the meat was produced in a conglomeration of filthy, fly-ridden slaughter sheds, with woefully inadequate veterinary inspection. The change was brought about, in part, by Dr. P. B. Darlington of Chanute, who toured the state snapping pictures of the terrible conditions in makeshift slaughterhouses. and presented this evidence to the state legislature which passed a bill, in 1945, to remedy this situation.

Personal.-Dr. R. W. Ament (WASH '44) joined the staff of the Southwestern Serum Company in November, 1949, as professional field representative. Dr. Ament served in the U. S. Army Veterinary Corps from January, 1943, to December, 1946, and was stationed at Fort Riley after his return from overseas.

Kentucky

Aid for Virus Abortion Research.-The University of Kentucky has received \$35,000 from the Grayson Foundation and the Keeneland Foundation for research on equine virus abortion.-The Blood-Horse, Nov. 26, 1949.

Louisiana

State Association.-The nineteenth annual conference of the Louisiana Veterinary Medical Association was held at the state university in Baton Rouge, on Jan. 18-19, 1950. President McH. Greer presided over the meeting. The program

Dr. P. J. Meginnis, Cicero, Ill.: "Some Leg Ailments of the Race Horse" and "Leptospirosis and Infectious Hepatitis in Dogs" (with illustrations).

Dr. A. A. Lenert, head, large animal clinic,

Texas A. & M. College, College Station: "Bovine Surgery" and "A Day in the Clinic" (with illustrations)

Dr. C. P. Zepp, Sr., New York City, president of the AVMA: "Obstinate Skin Diseases of

Dogs."

The following motion pictures were shown: "Gelfoam in Surgery," Upjohn Company; "Brucellosis in Swine," AVMA film library; "Modern Control of Poultry Diseases," Lederle Laboratory; and "Swine Erysipelas," Bureau of Animal Ins/R. B. LANK, Secretary. dustry.

Maine

State Association .- Dr. Edwin Laitinen, West Hartford, Conn., AVMA Executive Board member from the Ninth District, was guest speaker at the monthly meeting of the Maine Veterinary Medical Association in Lewiston on Jan. 11. 1950. Dr. Laitinen spoke of the affairs of the AVMA and showed slides of the central He also showed colored slides taken during the Fourteenth International Veterinary Congress and the European tour,

Officers elected for the ensuing year are Drs. Lewis B. Denton, Dover-Foxcroft, president; Freeman, Rumford, vice-president; Arlan E. Stanford D. Merrill, Augusta, secretary-treasurer, Members of the Executive Board are Drs. Alfred E. Coombs, Skowhegan; Edward C. Moore, Lewiston; and Philip R. Brown, Belfast,

S/STANFORD D. MERRILL, Secretary.

Michigan

Conference for Veterinarians.-More than 350 veterinarians were in attendance at the twentyseventh annual conference for veterinarians at the Michigan State College School of Veterinary Medicine on Jan. 25-26, 1950. The scientific program follows. Speakers not otherwise identified are members of the faculty.

Dr. Paul Reineke: "Geiger Counter and Iso-

topes in Dogs."

Dr. C. A. Runnells: "Autopsy Technique." Dr. H. J. Benson, Howell: "Pendulous Crop Operation in the Turkey."

Dr. Peter Babich, Flint: "Wire Support for

Dogs' Ears. Dr. C. F. Clark: "Cervical Tuberculin Test."

Dr. A. E. Erickson, Charlotte: "As Veterin-

arians We Are Fortunate."

Dr. J. L. McKitrick, Columbus, Ohio: "Ketosis" and "Raising Calves and Calf diseases,"

Dr. Mark Allam, University of Pennsylvania, Philadelphia: "Foreleg Paralysis in the Dog" and "Perineal Herniorrhaphy."

Dr. F. A. Burlingame, Chesaning: "Meat Inspection by the Practitioner."

Drs. W. N. McMillen, R. W. Luecke, and

Frank Thorp, Jr.: "Swine Enteritis."

Dr. C. P. Zepp, Sr., New York City, president of the AVMA: "Veterinary Medicine," "Obstinate Skin Diseases of the Dog," and "Diseases and Surgery of the Ear of the Dog and Cat."

Dr. B. J. Killham: "Field Experiences with Brucella M Vaccine."

Dr. F. E. Eads and P. A. Hawkins: "The Use of Sulfaquinoxaline."

Drs. L. H. LaFond, Detroit: "Small Animal Hospitals."

Drs. David Ellis, Memphis, Wm. Mackie, Lapeer, and Louis Newlin, Romeo: "Common Cattle Diseases."

> 5/B. J. KILLHAM, Chairman Conference Committee.

Minnesota

The Pomeroy Veterinary Dynasty.—The St. Paul Sunday Pioneer Press for Jan. 22, 1950, published the story of the Pomeroy veterinarians who have practiced in that city for sixty-four years. It was in 1886, three years after receiving his D.V.M. degree from the Montreal Veterinary College of McGill University, that Dr. B. S. Pomeroy started practicing veterinary medicine in St. Paul—and, thus, began a dynasty of veterinarians that bids well to continue indefinitely. Today, in St. Paul, there are four Pomeroy's practicing veterinary medicine, for the three sons of Dr. Pomeroy followed in his footsteps.

Dr. Benjamin S. Pomeroy, the eldest son, received his D.V.M. degree from Iowa State College in 1933; his M.S. degree from Cornell University in 1934; and his Ph.D. degree from the University of Minnesota in 1944. He has been a member of the faculty of the School of Veterinary Medicine at the University of Minnesota since 1934.

The second son, Dr. James A. Pomeroy (KSC '49) is a member of the field force of the Minnesota Livestock Sanitary Board.



-St. Paul Piencer Press
Drs. Benjamin S. Pomeroy (left), B. S. Pomeroy, James
A. Pomeroy, and Harold E. Pomeroy.

Dr. Harold E. Pomeroy (COLO '48), the youngest son, is now associated with his father

in veterinary practice.

Dr. B. S. Pomeroy has four grandsons, still quite young, but in all probability there will be veterinarians in the Pomeroy family for years to come.

State Society.—The fifty-third annual meeting of the Minnesota State Veterinary Medical Society was held in the Hotel St. Paul on Jan. 16-18, 1950, with 283 veterinarians in attendance. The program, one of the best the society has presented, follows.

Dr. Floyd Sharp, Ute, Iowa: "Diseases of

Dr. A. H. Quin, Jensen-Salsbery Laboratories, Kansas City, Mo., was moderator of a panel discussion on "Problems of Interest to the Veterinarian." He was assisted by Drs. T. H. Ferguson, Lake Geneva, Wis.; E. R. Carpenter, Minnesota Lake; L. T. Railsback, Ellsworth; D. E. Trump, Owatonna; C. O. Eliason, Benson; and D. S. Steele, Minneapolis.

Dr. J. P. Arnold, Mora: "Surgery of the Teat,"

Dr. Geo. R. Fowler, professor of veterinary surgery, Iowa State College, Ames: "Surgical Diseases of Cattle and Their Treatment."

Dr. W. H. Dreher, Badger Breeders Coöperative, Shawano, Wis.: "Infertility in the Cow." Dr. J. H. Frick, head, Department of Surgery and Medicine, Division of Veterinary Medicine,

Kansas State College, Manhattan: "Medical and Surgical Diseases of Small Animals." Dr. H. J. Griffiths, School of Veterinary Medicine, University of Minnesota: "The Screw-

worm Problem."

Dr. B. S. Pomeroy, School of Veterinary Medicine, University of Minnesota: "Respiratory Diseases of Fowl."

Dr. T. H. Ferguson, Lake Geneva, Wis.: "Diseases of the Horse."

Dr. F. C. Driver, inspector-in-charge, Bureau of Animal Industry, St. Paul: "Some Observations on the Brucellosis Control Problem in Minnesota."

Dr. R. L. West, secretary, the State Livestock Sanitary Board, St. Paul: "The State Livestock Sanitary Board."

Dr. D. B. Palmer, Wayzata: "The Veterinary Examining Board."

Featured speakers at the annual dinner were Dr. C. F. Schlotthauer, who reported on the Fourteenth International Veterinary Congress; and Countess Maria Pulasky, who told of her life as a spy.

Officers elected at the business session are Drs. J. J. Kelly, Marshall, president; W. F. Flanary, St. Charles, vice-president; G. A. Larson, Breckenridge, first vice-president; E. G. Hughes, Sleepy Eye, second vice-president; B. S. Pomeroy, University Farm, secretary-treasurer; and L. T. Railsback, Ellsworth, trustee.

Dr. H. C. H. Kernkamp, after eleven years of devoted service, has resigned as secretarytreasurer of the state society. His untiring enthusiasm and energy have contributed greatly to the success of this organization.

S/HENRY J. GRIFFITHS, Resident Secretary.

Drs. Campbell and Merrill Join University

Staff.—Dr. John N. Campbell (ONT '15) joined the staff of the School of Veterinary Medicine of the University of Minnesota in December, 1949. Since receiving his degree of D.V.M., Dr. Campbell has been in private practice and for many years was located at Fairmont. His success as a practitioner and lecturer has attracted nation-wide attention. Dr. Campbell is in charge of the Department of Clinics. Dr. Robert A. Merrill (ISC '26) joined the staff on Jan. 1, 1950. Dr. Merrill was in general practice at Clara City and is widely and favorably known for his work in the clinical field. He is in charge of the ambulatory clinic of the new school.

Other additions to the faculty, made during 1949, are Drs. Alvin F. Weber (ISC '44), C. C. Turbes (ISC '44), and T. M. Christison (Ph.D.), Department of Anatomy; Clyde M. Bemis (WASH '47), W. R. Pritchard (KSC '46), and R. B. England (KSC '46), Department of Clinics; Jack E. Moulton (WASH '49), Department of Pathology; T. B. O'Dell (Ph.C.), pharmacology; and W. R. Hess (Ph.D.), who is doing research work on bovine brucellosis.

S/HENRY I. GRIFFITHS, Resident Secretary.

New Jersey

State Association.—The Veterinary Medical Association of New Jersey held its sixty-sixth annual meeting on Feb. 2-3, 1950, at the Hotel Hildebrecht in Trenton. President Robert P. Lawrence gave the opening address and presided over the following program.

Dr. Harry Ticehurst, Beechwood, New Jersey representative to the Fourteenth International Veterinary Congress in London, gave a lively re-

port of the activities of the Congress.
Dr. Elton J. Hansens, Ph.D., associate research specialist in entomology, Rutgers University, New Brunswick: "Recent Developments in the Control of Insect and Parasitic Pests of Animals."

Dr. A. H. Quin, head, Professional Service Division, Jensen-Salsbery Laboratories, Inc., Kansas City, Mo.: "Some Trends and Developments in Veterinary Therapy" and "A Résumé of Certain Diseases of Swine."

Dr. Jacques Jenny, associate in veterinary surgery, University of Pennsylvania, Philadelphia: "Kuentscher's Method of Intramedullary Nailing in Femur Fractures of the Dog."

Dr. Robert L. Ticehurst, Red Bank: "A Discussion of Some Equine Breeding Problems."

Dr. C. Lawrence Blakely, head, Department of Surgery, the Angell Memorial Animal Hospital, Boston, Mass.: "Anesthesia and Its Hazards" and "A Group of Operations: Useful but Seldom Performed."

Dr. Laurence W. Goodman, Manhasset, N.Y.: "Hospital Construction."

Dr. J. B. Engle, Summit: "Hospital Manage-

Dr. C. P. Zepp, Sr., New York City, president

of the AVMA, extended greetings of the Asso-

Dr. E. W. Tucker, field veterinarian, New York Regional Laboratory, Kingston, N.Y.: "The New York State Mastitis Control Program."

Dr. Oscar Sussman, senior public health veterinarian, State Department of Public Health, Trenton: "The Veterinarian's Role in the Control of Animal Diseases Transmissible to Man."

Mr. Joseph A. Murphy, assistant deputy attorney general, State House, Trenton: "The New Jersey Veterinary Medical Practice Act, Its Interpretation and Application."

The motion pictures "Gelfoam in Surgery" and "Outbreak—the Story of Foot-and-Mouth Disease" were shown through the courtesy of the Upjohn Company and the U. S. Bureau of Animal Industry, respectively.

s/J. R. Porteus, Secretary.

Public Health Plan.—Under a plan authorized by 1949 legislation, state health services will be brought closer to the people. Four state district health offices will be set up at strategic points throughout the state to assist municipal authorities and to serve areas without other public health officers. Each of the district health offices will have an officer to supervise activities, a veterinarian, a public health engineer, a nurse, and a sanitarian. Each district veterinarian will be in close contact with the practicing veterinarian and physician and will have charge of milk and meat inspection and diseases transmissible from animals to man.

At this time, the following veterinarians are with the state department of health: Drs. L. M. Lounsbery, chief, section of food and drugs; J. S. McDaniel, rabies control program; and Oscar Sussman, senior public health veterinarian, who is consultant to the director of environmental sanitation.

s/J. R. Porteus, Secretary.

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the Hotel Statler, Wednesday evening, Jan. 4, 1950. The subject of the lecture section was "Canine Encephalitis," including distemper, postvaccinal paralysis, and toxoplasmosis. "Laboratory Investigations in Dogs, Ferrets, and Mice" was presented by Dr. Hilary Koprowski (M.D.); "Pathology," by Drs. George A. Jervis (M.D.) and Frank Bloom; and "Clinical Experiences" by Drs. Arthur North, Jr., and B. J. Finkelstein.

Dr. J. Lawrence of Brooklyn was introduced as a new member.

5/C. R. Schnoeder, Secretary.

Dr. MacKellar Chairman of Veterinarians' Division of March of Dimes.—Dr. Robert S. MacKellar, Sr., New York City, past president of the New York City and New York State

veterinary medical associations and of the AVMA. was chairman of the veterinarians' division of the Greater New York 1950 March of Dimes. He was assisted by Dr. C. P. Zepp, Sr., president of the AVMA. Dr. John A. Ward was chairman of the veterinarians' division for the borough of Richmond and Dr. B. J. Finkelstein, of Brooklyn.

Dr. MacKellar has also accepted the chairmanship of the veterinarian's division of the 1950 Red Cross fund campaign of greater New

York.

North Carolina

Annual Conference.-The twelfth annual conference for North Carolina veterinarians was held at the state college in Raleigh on Jan. 24-27, 1950, under the combined auspices of the state college and the North Carolina State Veterinary Medical Association. The following program was pre-

Dr. R. K. Waugh, head, Department of Dairy Husbandry: "Raising the Dairy Calf."

Dr. J. Clarke Osborne, pathologist, state college experiment station: "Vibrionic Abortion in Cattle and Sheep."

Dr. Gennard Matrone (Ph.D.), chemist, U.S. Department of Agriculture, North Carolina State College: "Minerals in Livestock Feeding.

Dr. Mark L. Morris, consultant in animal nutrition, New Brunswick, N.J.: "The Nutritive Requirements of the Dog" and "Nutrition in Relation to Canine Distemper Immunization."

Dr. George Wise, head, nutrition section, North Carolina State College: "Pre-Gastric Changes in

Milk Digestion.

Dr. I. W. McDonald, Institute of Animal Physiology, Cambridge University, England: "Some Recent Observations on Digestion in Ruminants."

Dr. James H. Steele, U. S. Public Health Service, Atlanta, Ga.: "Animal Diseases Communicable

Dr. B. J. Lindley was chairman of a panel discussion on "Veterinary Public Health." panel members were Drs. James H. Steele; J.W.R. Northon, J. M. Jarrett, Robert L. Cavaness, E. H. Ellenwood, Fred G. Pegg, H. R. Rollins, L. M. Hutchings, F. H. Fox, and R. C. Klussendorf.

Dr. F. H. Fox, New York State Veterinary ollege, Ithaca: "Current Problems in Cattle College, Ithaca: Practice," "Surgical Procedures in Routine Dairy Practice," and "Rabies in Large Domestic Ani-

Dr. R. C. Klussendorf, assistant executive secretary of the AVMA, Chicago: "Reproductive Disorders in Cattle."

Dr. L. M. Hutchings, veterinary division, Purdue University, Lafayette, Ind.: "Swine Diseases" and "Swine Brucellosis" (with illustrations)

Dr. H. J. Rollins, state veterinarian, Raleigh: "The Present Status of the Brucellosis Program in North Carolina."

Dr. Martin Roepke, veterinary division, University of Minnesota, St. Paul: "The Ring Test

as an Adjunct to the Agglutination Test in the Control and Eradication of Brucellosis.'

s/J. H. Brown, Secretary.

Ohio

Wife of Veterinarian Wins Turkey Shoot .-Mrs. Betty Laughlin, wife of Dr. Newton C. Laughlin, was invited to attend and participate in a turkey shoot held by the Euclid Rod and Gun Club in Willoughby recently. When the smoke had cleared, she emerged victor with two prizes over a field of men.

Oklahoma

State Association.-The Oklahoma Veterinary Medical Association held its thirty-fifth annual meeting in the Skirvin Tower Hotel, Oklahoma City on Jan. 9-10, 1950. The scientific program

Dr. Roger P. Link, University of Illinois School of Veterinary Medicine, Urbana: "Hyperkeratosis (X Disease)" and "Recent Ad-

vances in Chemotherapy."

Dr. H. E. Redman, A. & M. College of Texas, College Station: "Wheat Poisoning" and "Large Animal Cases" (with illustrations).

Dr. C. K. Smith, Sioux City, Iowa: "Renal Insufficiencies in Small Animals" and "Perineal Herniorrhaphy in the Dog."

Dr. Joe F. Knappenberger, Ashe Lockhart, Inc., Kansas City, Mo.: "Digestive Disorders

of Cattle."

Dr. Chester E. Williams, Butler: "Report on Fourteenth International Veterinary Congress.' Dr. Earl Mundell, Jensen-Salsbery Laboratories, Kansas City, Mo.: "The Current Status of Nonviable Hog Cholera Vaccine."

At the business session, Dr. C. E. Hofmann, Tulsa, was elected president; Dr. W. S. Mason, Stillwater, secretary-treasurer. The attendance at the meeting was 125.

5/LEWIS H. MOE, Secretary.

. . . Veterinary School,-Dean C. H. McElroy of the Division of Veterinary Medicine, Oklahoma A. & M. College, has surrounded himself with a teaching staff of 19 members and has divided the curriculum into eight departments-anatomy, physiology and pharmacology, surgery, medicine, pathology, bacteriology, parasitology, and laboratory technique.

Ontario

Provincial Officers.-Officers elected at the business meeting of the Ontario Veterinary Association on Jan. 12-14, 1950, are Drs. L. C. Swan, St. Catherines, president; H. Worton, Peterborough, first vice-president; A. E. Cameron, Ottawa, second vice-president; and G. A. Edge, Toronto, secretary-treasurer and registrar.

S/T. LLOYD JONES, Resident Secretary.

. . . Refresher Course,—A refresher course, which will include didactic '_tures and laboratory and clinical periods, will be held at the Ontario

Veterinary College, July 5-18, 1950. The laboratory periods will embrace study sections in clinical pathology, radiology, hematology, genetics, reproduction, and cardiography. The summer meeting of the Ontario Veterinary Association will be held immediately following the course-July 19-21.

S/A. L. MACNABB, Principal.

Pennsylvania

Keystone Association .- The January 25 program of the Keystone Veterinary Medical Association featured a round table discussion of local problems in veterinary medical practice. The meeting was held in the University of Pennsylvania School of Veterinary Medicine in Philadelphia.

s/R. C. SNYDER, Secretary. . .

Alumni Society.-Approximately 251 veterinarians, their wives, and guests attended the banquet of the Veterinary Alumni Society held in connection with the fiftieth annual conference of veterinarians of the University of Pennsylvania School of Veterinary Medicine, Jan. 3-4, 1950. Dr. George C. Poppensiek, president of the alumni society, was toastmaster and introduced guest speakers Harold E. Stassen, president of the University of Pennsylvania, and Brig. Gen. James A. McCallam, director of the Veterinary Corps, U. S. Army. General McCallam reviewed the life of Dr. E. T. Booth, professor emeritus of veterinary anatomy and honored guest of the evening. He described Dr. Booth's activities as a teacher, member of the Board of Trustees of Alpha Psi Fraternity, and as the secretary for many years of the Veterinary Alumni Society, emphasizing his devotion and loyalty to the University he served for forty years.

Dr. Booth, who reached retirement age in 1949, is a fisherman by avocation and received several gifts from alumni to insure many happy

fishing trips.

5/DONALD G. LEE, Resident Secretary. . . .

Free Calfhood Vaccination .- The Pennsylvania Department of Agriculture has announced a new program of free vaccination of calves. It is estimated that up to 200,000 calves will be vaccinated each year under the new plan approved by a statewide committee of 14 representatives of beef and dairy cattle interests.

Both the vaccine and the services of veterinarians are provided for calves between the ages of 6 and 8 months. Under the old program, owners paid for vaccine as well as for the services of veterinarians. Calves 8 to 10 months old also come under the free provision, but special permits are required for them. Free vaccine, but not free services of veterinarians, is supplied by the state for cattle of other ages.

Testing and elimination of diseased cattle will continue. Federal and state indemnity payments are provided for the slaughter of reactors, as under the former program, but a new provision permits indemnity payments on animals vaccinated in the 6- to 8-month age group which react eighteen months or more after vaccination.

South Carolina

Public Relations in Veterinary Medicine .-"It is Certainly Not a Dog's Life Anymore" was the title of a front-page story in section B of the Sunday issue of the Greenville News for July 31, 1949. The story, with five illustrations and a discussion by F. C. McConnell, III, is an out-standing account of the ideal type of veterinary medical public relations, because throughout the text, the name of no single veterinarian nor of any veterinary hospital is mentioned, nor do any of the pictures show the features by which the surgeon could be identified

With the subhead, "Animal Treatment Is Now Comparable with Best Human Methods," the story reported the many phases, including tonsillectomies and broken legs, of the veterinarian's daily routine. The pictures show (1) the use of the fluoroscope for locating a foreign body in the stomach; (2) the bronchoscope and gastroscope being used to remove a swallowed object; (3) the gastroscope, with the screw a dog had swallowed; (4) a tonsil snipper being used in a tonsillectomy; and (5) the Steinman pin being inserted in intramedullary fixation in fracture of the femur.

Tennessee

Tri-State Conference.-The annual Tri-State Conference was held Jan. 16-17, 1950, in the Peabody Hotel, Memphis. This conference includes the Arkansas, Mississippi, and Tennessee veterinary medical associations. Dr. W. R. Lawrence, president of the Tennessee association, gave the president's address for the tri-state meeting, and pulled no punches in denouncing the practice of issuing legislative veterinary licenses to individuals without veterinary education. He also called for longer internship for veterinary graduates.

The program follows.

Dr. C. P. Zepp, Sr., New York City, president of the AVMA: "Veterinary Medicine," "Obsti-nate Skin Diseases of the Dog," and "Ear Diseases of the Dog and Cat, Including Surgery of the Ear."

Dr. Robert W. Moore, vice-director, cooperative extension work, State of Tennessee, Knoxville: "Veterinary Medicine and the Extension Service."

Dr. G. B. Schnelle, assistant chief of staff, the Angell Memorial Animal Hospital, Boston: "The Use of the X-Ray in Diagnosis of Small Animal Diseases."

Dr. James Farquharson, professor and head, Department of Veterinary Surgery and Clinics, School of Veterinary Medicine, Colorado A. & M. College, Fort Collins: "Surgical Technique."

Dr. E. S. Tierkel, officer in charge, Rabies Control Branch, Veterinary Public Health Services, Atlanta, Ga.: "Rabies."
Dr. T. A. Sigler, Greencastle, Ind.: "Horses."

Dr. C. E. Cord. state veterinarian. Nashville. was toastmaster at the hanquet.

5/H. W. NANCE, Secretary, S/DENNIS COUGHLIN, Resident State Secretary.

State Officers.-Officers for the Tennessee Veterinary Medical Association, which held its forty-second annual business meeting during the Tri-State Conference in Memphis on Jan. 16-17, 1950, are Drs. H. W. Hayes, Knoxville, president: Fred Schell, Franklin, president-elect; Kenneth Whittington, Memphis, first vice-president; Ray Gathman, Franklin, second vice-president: Howard Hill. Marvville, third vice-president: and H. W. Nance, Lawrenceburg, secretary-treasurer.

Dr. Dennis Sikes, head of the Department of Veterinary Science at the University of Tennessee. announced that a veterinary pathology and research laboratory will soon be started at the university. This is the direct result of years of untiring effort on the part of Dr. Sikes.

s/H. W. NANCE, Secretary. S/D. COUGHLIN. Resident Secretary.

Texas

State Association.-On Jan. 23-24, 1950, members of the State Veterinary Medical Association of Texas met in the Galvez Hotel in Galveston. The speakers, and subjects covered on the two-day program, follow.

Mr. Herald Cox, Lederle Laboratories, Pearl River, N. Y.: "Canine Distemper and Related

Viruses"

Dr. W. F. Irwin, Tulsa, Okla.: "Feline Prac-

Dr. Ludwik Anigstein (M.D.), professor of preventive medicine and public health, University of Texas, medical branch: "Review of Current Developments in the Problem of Q Fever."

Mr. Code E. Edwards, acting legal counsel, State Veterinary Medical Association of Texas:

"Progress of Legal Counsel."

Dr. Martin Schneider (M.D.), professor of radiology, University of Texas, medical branch: "Self-Protection from Radiation Hazards of Fluoroscopy.

Dr. Joe F. Knappenberger, Ashe Lockhart, Inc., Kansas City, Mo.: "Digestive Disorders of

Dr. Edgar J. Poth (M.D.), professor of surgery, University of Texas, medical branch: "Sutures and Suture Material."

Mr. Lewis E. Harris, director, Pharmaceutical Research and Control Department, Norden Laboratories, Lincoln, Neb.: "Antibiotic Therapy in Veterinary Medicine" and "Laboratory Tests for the Veterinarian."

Drs. Irwin and Knappenberger conducted a panel of questions and answers from the audience.

Dr. T. G. Blocker, Jr. (M.D.), professor of plastic and maxillo-facial surgery, University of Texas, medical branch: "Wound Treatment."

During the last afternoon, there were meetings

of associated groups, and a conducted tour of the Galveston Medical School.

s/E. A. GRIST, Secretary.

Washington

O Fever in Veterinary Students.-Three cases of Q fever are reported among students of the College of Veterinary Medicine at Pullman. These students had been in close contact with animals. All three had influenza-like infections resembling colds or other upper respiratory infections.-Incidence of Q Fever in Eastern Washington, A Serological Survey. by Raia Public Health Reports 64; Doddananiayva. Sept. 1939; 1230-1236.

Wisconsin

Tribute to Dr. O'Reilley .- Dr. L. J. O'Reilley (CVC '12), titular head of America's fur-farming industry, is graciously complimented by the American Fur and Market Journal for "the immeasurable service he has rendered to the fur business generally." Farmers, breeders, retailers, manufacturers, and pelt dealers for years have gained from Dr. O'Reilley's nationwide guidance. Based on knowledge of animal breeding, feeding, hygiene, and general management, from the start, fur-farming was rescued from some of the influences which have dogged the other branches of animal production.

FOREIGN NEWS

Argentina

U.S. Ban on Meat Not Resented .- Practical cattlemen in the Argentine show no resentment toward the United States embargo on South American beef, according to Prof. A. D. Weber of Kansas State College (Kansas Stockman, Dec., 1949).

Invited to judge the Palermo beef cattle show in Buenos Aires, Professor Weber went prepared to defend the embargo. "But," he declared, "not once during my six weeks in South America visiting cattlemen did anyone ask why the United States would not permit Argentine cattle or fresh, chilled beef to come in. Instead, they gave me reasons for keeping diseased beef out."

Australia

Incidence of Bovine Tuberculosis .- Approximately 5 to 10 per cent of the dairy cattle in Australia are infected with bovine tuberculosis, the Committee on Tuberculosis of the Australian Veterinary Medical Association has reported. Up to 40 per cent of the dairy cattle are infected in some areas, especially where veterinary service is inadequate.

England

Devaluation Snags Bovine Tuberculosis Drive.—Another prolonged chapter is about to be written in the unhappy story of bovine tuberculosis in Britain, The Veterinary Record declares (Nov. 12, 1949). Just when it appeared that the area plan of eradication would be inaugurated, Minister of Agriculture Williams announced that "economy measures following upon the devaluation of the pound" were forcing the postponement of the project.

Greece

Army Veterinary Services.—All remounts now coming into Greece for the National Army are from the United States, as are most drugs and veterinary medical equipment. Specially fitted transport ships bring about 800 mules at a time. Evacuation stations and hospitals for the treatment of sick and wounded animals are under the command of veterinarians, usually ranking from second lieutenant to major. Because there are no colleges of veterinary medicine in Greece, many of the National Army veterinarians have obtained their training abroad—most of them in Italy and France, a few in Belgium and Hungary.

Mange, epizoötic lymphangitis, and galls have accounted for the greatest number of casualties, according to the Journal of the Royal Army Veterinary Corps (Dec., 1949). Streptomycin is now under test for epizoötic lymphangitis at the Salonika veterinary hospital, but it is too early to decide its value.

India

Silver Anniversary of Indian Journal.—The Indian Veterinary Journal, official organ of the All-India Veterinary Association, celebrated its twenty-fifth year of publication with its July, 1949, issue. Pangal Srinivasa Rao, G.M.V.C., is editor.

The anniversary issue, bound with a silver cover, carried messages of congratulations from veterinary medical leaders and organizations throughout the world, including many from American colleges of veterinary medicine and editors of journals. AVMA greetings were extended by Dr. L. M. Hurt and Dr. A. H. Quin, chairman of the AVMA Committee on Public Relations.

Japan

Veterinarians Plan National Convention.— The board of directors of the Japanese Veterinary Medical Association met recently in Tokyo to discuss current problems and to lay plans for a national convention to be held in the city of Osaka, March 26-28, 1950.

Halt Black Market in Counterfeit Drugs.— Tokyo police have ended a reportedly huge black market in counterfeit drugs, with the arrest of a well-organized ring of forgers and counterfeiters. The ring had been making facsimiles of original labels and containers to mask placebo-like preparations represented as streptomycin, penicillin, and sulfadiazine.

Sodium bicarbonate was sold as streptomycin, a bismuth subsalicylate preparation was passed off as penicillin-in-oil, and sulfanilamide was masqueraded as sulfadiazine.

Veterinarians in Public Health Work.—The Veterinary Affairs Division of General MacArthur's headquarters reports that 304 Japanese veterinarians have been trained in recent veterinary refresher courses on public health given by the Institute of Public Health, and that all of them are now engaged in public health veterinary service. The seventh class, consisting of 42 veterinarians from health centers and health departments throughout Japan, was graduated on Aug. 13, 1949.

VETERINARY MILITARY SERVICE

Transfer of Veterinary Reserve Officers to Air Force.—In the January, 1950, JOURNAL (p.81), information was published regarding the transfer of Army veterinary reserve officers to the Air Force Veterinary Corps. As stated at that time, officers desiring to transfer must submit applications prior to July 25, 1950, to the Adjutant General, Department of the Army, through reserve channels. Additional information may be obtained from the Office of The Surgeon General, U.S. Air Force, Washington 25, D. C., Attention: Chief, Veterinary Division.

According to a recent letter from Major R. R. Miller, deputy chief of the Air Force Veterinary Service, definite reserve programs have been planned and part-time training will be available in the future.

Lieutenant Oster Gets Regular Army Commission.—Lieut. Martin S. Oster (UP '46) Atlantic City, N.J., was sworn into the Regular Army with the rank of first lieutenant by Col. L. L. Shook, chief of the First Army Veterinary Division at an informal ceremony at the Boston Army Base on January 24. Lieutenant Oster, who is now stationed at the Army Base Dispensary, completed a twelve-month competitive tour of duty at Fort Buchanan, Puerto Rico, and was among 12 Veterinary Corps officers throughout the entire Army to be selected for



Lieutenant Oster (left) being sworn into the Regular Army by Colonel Shook.

commissioning in the Regular Army. He was the only officer in the First Army Area.

He joined the Army in July, 1943, and attended the Army Specialized Training Program at the Chicago Quartermaster Depot. He was commissioned in the Organized Reserve Corps in November, 1949, and immediately started the competitive tour which he completed recently.

Colonel Cowherd Retires.—Col. Charles M. Cowherd (KCVC '12), U.S. Air Force, V.C., was retired from active duty after more than thirty years of service in the military medical departments. Colonel Cowherd came on active duty in August, 1917, as a second lieutenant in the Veterinary Corps, and during World War I, served at the Quartermaster Depot, Chicago. In July, 1922, he was appointed as the veterinarian, Second Engineer Regiment, Second Division, Camp Travis, Texas. From February, 1926, to April, 1929, he served in the Hawaiian Islands. He was the veterinarian for the Headquarters Task Force at Noamea, New Caledonia, at the beginning of World War II, and on Jan. 22, 1944, he became chief of the Veterinary Branch, Procurement Division, Australia. After the war, he became the command veterinarian at Headquarters Third Air Force, Tampa, Fla. Colonel Cowherd retired from Brookley Air Force Base, Ala., where he will make his future home.

BIRTHS

Lieut. (MSC '47) and Mrs. William H. Brunn, San Francisco, Calif., announce the birth of Steven Michael on Nov. 7, 1949.

Dr. (ISC '36) and Mrs. Albert Emminger, Salinas, Calif., announce the birth of James Albert on Dec. 5, 1949.

Dr. (ISC '46) and Mrs. G. P. Shindel, De-Witt, Iowa, announce the birth of a son, Larry Georges on Dec. 12, 1949.

George, on Dec. 12, 1949. Dr. (COLO '48) and Mrs. G. O. Johnson, Ralston, Neb., announce the birth of twins, George Olaf, Jr., and Elizabeth May, on Jan. 10, 1950.

DEATHS

★Charles Alex (BERN '30), 44, Chicago, Ill. died Oct. 8, 1949. Dr. Alex was born in Vitlalis. Lithuania, and became a citizen of the United States in 1944. An inspector of dressed poutry, he was a member of the Lithuanian Veterinary Association from 1931 to 1939 and joined the AVMA in 1945.

R. Logan Allen (KCVC '05), 67, Windsor. Mo., died on Nov. 25, 1949, after an illness of more than seven years. Dr. Allen joined the meat inspection force of the U.S. Bureau of Animal Industry at Oklahoma City shortly after receiving his D.V.M. degree. He later became

assistant state veterinarian of Missouri. In 1907, he entered private practice at Windsor where he remained until his death. He was a member of the Missouri Valley and Missouri State Veterinary Medical associations, and was past president of the latter.

Ray Banister (IND '12), 68, Columbus, Ind., died on Oct. 12, 1949, of a cerebral hemorrhage. Dr. Banister was engaged in state work until 1937, when he entered small animal practice at Columbus.

S. C. Brouse (OSU '15), Dayton, Ohio, died Dec. 1, 1949. Dr. Brouse had been a member of the AVMA.

*Sherman L. Brown (WASH '10), 70, Portland, Ore, died Dec. 23, 1949. Dr. Brown began practice in Portland and in 1917 was appointed professor of veterinary science at Washington State College. After teaching for six years, he returned to private practice in Portland. Later he was employed as city veterinarian, in which capacity he served for thirteen years. He is remembered for his part in the campaign to stamp out bovine tuberculosis. Dr. Brown was member of the AVMA for twenty-eight years.

He is survived by his widow, née Dora Myers, and a son and daughter.

*John N. Buker (OSU '45), 27, Bath, Ohio, died Dec. 15, 1949, of a heart attack. He spent a year in the Akron and Columbus, Ohio, health departments and then attended Harvard, where he received his M.P.H. degree with honors. Dr. Buker was assigned to the Wisconsin State Board of Health to investigate the epidemiology and epizoötiology of brucellosis. The following year, he accepted a research assignment in the School of Veterinary Medicine, Ohio State University, where he remained until July, 1949, when he resigned to return to private practice in Bath. Dr. Buker was admitted to the AVMA in 1945.

James A. Colescott, Terre Haute, Ind., died Jan. 12, 1950.

Charles I. Crawford (ST JOS '11) 61, Overbrook, Kan., died Dec. 25, 1949. Dr. Crawford had practiced for thirty-eight years in Douglas County. A son, Dr. Dale I. Crawford (KSC '46), survives.

*Rice P. Steddom (ONT '86), 85, Lebanon, Ohio, died Dec. 20, 1949. Retired since 1934, Dr. Steddom served nearly a quarter of a century as the first chief of the Meat Inspection Division of the U. S. Department of Agriculture. Before entering government service in 1897, he practiced in the Middlewest, at the same time engaging in livestock ranching in Colorado. Dr. Steddom was instrumental in helping to develop the successful cattle dipping methods used to eradicate disease-carrying ticks. He was a member of the AVMA for fortytwo years.

^{*}Indicates members of the AVMA.



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An' Related Topics

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CAPITALIZING (continued)

7) Blended Eponyms.—The warning not to be trapped into capitalizing the names of diseases, already stressed, is especially opportune in the case of words into which the names of persons are blended. Their derivations do not make them proper nouns.

Write:

brucellosis, not Brucellosis leishmaniasis, not Leishmaniasis listerellosis, not Listerellosis pasteurellosis, not Pasteurellosis salmonellosis, not Salmonellosis

and do not capitalize:

jacksonian (epilepsy) addisonism (a syndrome) jennerian (pertaining to Dr. Jenner) jennerization (vaccination) pasteurization (a sanitizing process) roentgen (pertaining to x-rays)

The initial capital has been dropped from a score or more of words derived from von Roentgen's discovery:

roentgen rays roentgenology roentgenogram roentgenotherapy and many others.

8) Do not capitalize the x in x-rays. Though the correct style would be x-rays, the nonitalic x is the approved usage, i.e., x-rays, not X-rays nor X-Rays and always with a hyphen.

9) Another departure from correct usage is X disease for hyperkeratosis of cattle. The term is ill-chosen in two ways. X-disease (small x) has long been a synonym for woolsorters' disease of the human being, and the cattle ailment, being a common noun, should be written x-disease or x-disease if used at all as a veterinary term.

10) Breeds of Animals.—The thoughtless capitalizing of the names of drugs, diseases, and other common nouns has already been mentioned as one of the common faults of veterinary literature. Proof of this is strewn over this desk and surrounding shelves containing the latest books and journals of veterinary medicine. Contrariwise are the commonly uncapitalized proper nouns—the breeds of animals. Like the

COMING MEETINGS

Notices of Coming Meetings must be received by 8th of month preceding date of issue

Texas, South Central Regional Veterinary Medical Association. Second biannual meeting. Essar Ranch, San Antonio, Texas, March 11, 1950. N. Annelda Baetz, 600 Olmos Loop Road, San Antonio, Texas, Secretary.

Oregon State Veterinary Medical Association. Annual meeting. Multonomah Hotel, Portland, Ore., April 22, 1950. Roy H. Peterson, Tillamook, Ore., secretary.

Iowa, North Central Veterinary Medical Association. Spring meeting. Warden Hotel, Fort Dodge, Iowa, April 20, 1950. B. J. Gray, 300 1st Ave. S., Fort Dodge, Iowa, secretary.

American Animal Hospital Association, Annual meeting. Shirley Savoy Hotel, Denver, Colo., April 24-27, 1950. W. H. Riser, 5335 Touhy Ave., Skokie, Ill., executive secretary.

Minnesota, Southern Veterinary Medical Association. Spring dinner meeting. The Hormel Institute, Austin, Minn., April 27, 1950. George A. Young, Jr., 604 Nicholsen St., Austin, Minn., secretary.

Alabama Polytechnic Institute, twenty-sixth annual conference for veterinarians. Alabama Polytechnic Institute, Auburn, Ala., June 8-10, 1950. R. S. Sugg, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., dean.

Wisconsin Postgraduate Conference for Veterinarians. University of Wisconsin College of Agriculture, Madison, Wis., June 21-22, 1950. C. A. Brandly, University of Wisconsin College of Agriculture, Madison 6, Wis., chairman.

American Society for the Study of Sterility. Sir Francis Drake Hotel, San Francisco, Calif., June 24-25, 1950. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., secretary.

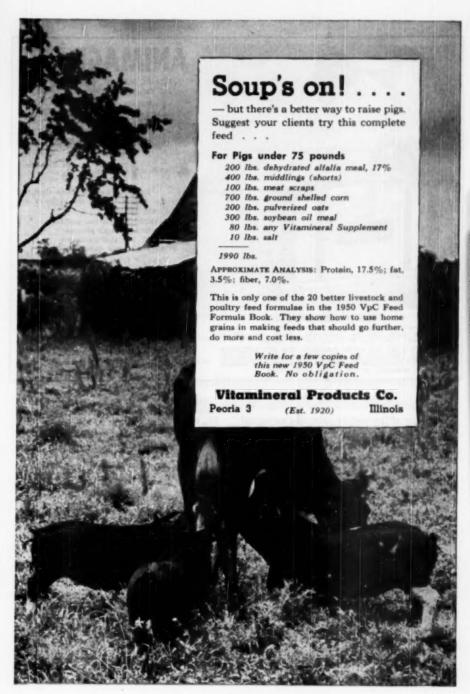
California State Veterinary Medical Association. Annual meeting. Berkeley, Calif., June 26-28, 1950. C. E. Wicktor, 203 Administration Building, Union Stockyards, Los Angeles 11, Calif., program chairman.

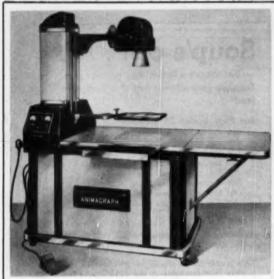
Ontario Veterinary College. Refresher course. The Veterinary College, Guelph, Ont., July 5-18, 1950. A. L. MacNabb, Ontario Veterinary College, Guelph, principal.

Northwest Veterinary Medical Conference. Annual meeting. Winthrop Hotel, Tacoma, Wash. July 17-19, 1950. J. L. Ellis, 2022 E. 4th St., Olympia, Wash., secretary.

(Continued on page 20)

(Continued on page 20)





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(Continued from page 18)

groupings of the human race, the zoölogical groups of lower and higher life possessing characters worthy of a name are proper nouns and should be so treated, at least, in our literature. A recently published book on the dog, praised for technical excellence, entirely ignores the matter, sometimes using capitals, sometimes not, for the same breed in the same chapter.

The names of all breeds should be capitalized, not only those derived from personal or geographic names. In AVMA usage, Terrier, Setter, Pointer, Retriever, Collie, and Spaniel are proper nous when used to designate a breed of dogs.

(To be continued)

(Continued from Page 18)

Ontario Veterinary Association. Summer meeting. Ontario Veterinary College, Guelph, Ont., July 19-21, 1950. A. L. MacNabb, Ontario Veterinary College, Guelph, principal. American Veterinary Medical Association. Annual meeting. The Municipal Auditorium,

Miami Beach, Fla., Aug. 21-24, 1950. J. G.

Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

United States Livestock Sanitary Association. Annual meeting. Westward-Ho Hotel, Phoenix, Ariz., Nov. 1-3, 1950. Dr. R. A. Hendershott, 1 West State St., Trenton, N.J., secretary.

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. Russell P. Cope, 1205 San Pablo Ave., Berkeley 6, Calif., secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soawe, 5666 Telegraph, Oakland, Calif., secretary. Fayette County Veterinary Association, Iowa, the

(Continued on page 24)



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The preceding paragraph is from a statement by Dr. A. A. Husman in the Federal Veterinarian (vol. 5, May, 1948), when he was chairman of the membership committee of the National Association of Federal

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Greater St. Louis Veterinary Medical Association.
Ralston-Purina Research Building, St. Louis,
Mo., the first Friday in February, April, June,
and November, W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis
2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treas-

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind, secretary.

Jefferson County Veterinary Society, Louisville, Ky., the first Wednesday evening of each month. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Keystone Veterinary Medical Association. School of Veterinary Medicine, University of Pennsylvania, Philadelphia, Pa., the fourth Wednesday of each month. Raymond C. Snyder, N. W. Cor. Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Massachusetts Veterinary Association. Hotel Statler, Boston, Mass., the fourth Wednesday of each month. C. L. Blakely, Angell Memorial Animal Hospital, 180 Longwood Ave., Boston, Mass., secretary-treasurer.

Michiana Veterinary Medical Association. Hotel Elkhart, Elkhart, Ind., 7:00 p.m., the second Thursday of each month. R. W. Worley, 3224 Lincoln Way West, South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y.,

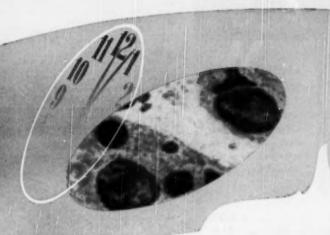
secretary.

Northern San Joaquin Valley Veterinary Medical
Association, the fourth Wednesday of each
month. I. N. Bohlender, Box 588, Turlock,

Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

(Continued on page 30)



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Assistant wanted for modern small animal hospital with intent of purchasing after one year. Sixty kennels, gross over \$50,000. Located in Michigan. \$15,000 down. Address "Box S 20," c/o Journal of the AVMA.

(Continued on page 30)



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GEXANE... a 1% concentration of the Gamma Isomer of Hexachlorocyclohexane... is the newest, fastest and most powerful insecticide yet developed for the treatment of parasitic infestation. One application kills ticks... destroys mites, including Sarcoptes scabiei and Demodex canis... kills flies, fleas and lice.

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(Continued from page 26)

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Redwood Empire Veterinary Medical Association, the second Tuesday of every other month. Charles D. Stafford, Novato, Calif., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

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(Continued on page 34)



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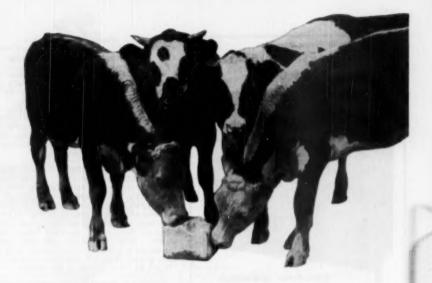
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(Continued on page 36)



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(Continued on page 40)

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I, Foley, E. J.; Stulte, A. W.; Lee, S. W., and Byrne, J. V.: Am. J. Vet. Research 10: 66 (Jan.) 1949.



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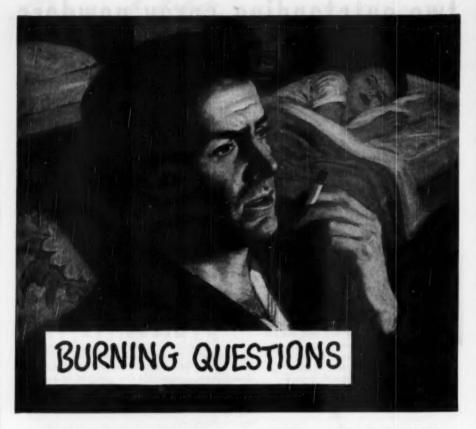
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Good sense, good management, good feed, good veterinary advice, and application of scientific knowledge will make possible the raising of satisfactory dairy herd replacements economically and with considerable reduction in the high mortality that now occurs.—W. E. Krauss, Ph.D., Ohio Agric. Exper. Station.

The Bureau of Animal Industry alone does not control any disease. It invites and requests the coöperation of practicing veterinarians and of livestock owners.—T. K. Jones, D.V.M., Indiana.

The annual losses to the American livestock and meat industries from parasitic infestations of various kinds amount to \$125 million annually.—Benj. Schwartz, Ph.D., Washington, D. C.

Wool provides but 10 per cent of the nation's demand for fiber. Cotton is highest with around 58 per cent. The figure for rayon is 15 per cent. The rest comes from flax, hemp, glass, milk, maize, and resins.

The U. S. Army is always in the market for choice German Shepherds suitable in size and temperament for military service. The dogs purchased are between 22 and 28 inches high and from 1 ½ to 2 ½ years old.

Notice to Contributors

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and the

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Manuscripts.—Manuscripts must be typewritten, double-spaced, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies also should be typed double space and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple. Complex tables are not conductive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

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DOG RESEARCH NEWS

How Long Should a Dog Live?

The average monkey lives to be 25 years of age or more. Why should the average dog live to be only 10 or 12?

Actually there are five important controllable factors in extending the span of a dog's life: (1) Careful Selective Breeding, (2) Scientific Feeding, (3) Sanitation and Disease Control, (4) Proper Equipment, and (5) Good Training.

One of the most important (and most easily controlled) factors is Scientific Feeding.



But sentimental owners, unfortunately, still feed their dogs by opinion rather than by scientific standards. Professional dog men know, of course, that you can't omit essentials from a bitch's diet without affecting her ability to breed, to whelp, and to nurse her young. It is also established that the absence of nutritional essentials will affect the length of life of all dogs of both sexes. That's why dog men have learned to depend on Friskies — a scientifically balanced, complete food which contains every known essential for complete nourishment.

How Much Fat in a Ration?

Good judgment should be used in the amount of fat that is added to a diet since (1) its high caloric value may reduce total consumption and thus upnet the balance of essential nutriments, or (2) it may be responsible for the development of an overfat condition of the dogs to which it is fed. And over-fatness reduces the life span of a dog. The amount of fat in Friskies is carefully controlled according to extensive tests made with dogs of many breeds.

The Value of the Veterinarian

Dog owners should not attempt to "doctor" their own dogs. There is always the danger of overlooking a basic fault or trouble which should be corrected. For example, if a dog does not thrive on Friskies, chances are there is something fundamentally wrong—something which calls for the specialized knowledge of the veterinarian. For Friskies has been scientifically developed to provide every known essential for complete nourishment for any normal dog.

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Question: What is the most effective method of ridding a dog of fleas? Answer: D.D.T. powder or dip.

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It is incorrect for laymen or veterinarians to assume that udder infusion should be used in all cases in the treatment and control of bovine mastitis.--C. S. Bryan, D.V.M., Michigan.

Livestock numbers must be adjusted toward the feed-producing capacity of the farm from the standpoint of crop land as well as pasture.-G. E. Hartwick, M.S. Kansas.

In America, 30 per cent of all income is spent for food, leaving more than twice as much for clothing, shelter, and luxuries.

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In India, 90 per cent of all income is spent for food, leaving little for all other human needs .- J. H. McLeod, M.S., Tennessee.

Homeopathic Treatment For Warts

Homeopathic tincture of thuja, third dilution, long prescribed by homeopaths as the perfect cure for warts, is recommended for cutaneous warts of cattle and buccopharyngeal warts of young dogs in the leading article of Recueil de Médecine Vétérinaire for May, 1949. In 1948, J. Vittoz of the Pasteur Institut de Nhatrang, Indo-China, wrote (ibid., 1948) of sensational results obtained in nonoperable, cutaneous papillomatosis of cattle from a homeopathic mixture of tincture of thuja, nitric acid. and causticum (a homeopathic specialty made from lime and potassium sulfate), whereupon the present author decided to try tincture of thuja alone for bucco-pharyngeal papillomatosis in dogs. The results exceeded expectations. The warts in all cases began to vanish following the third day of treatment, and they did not recur during long post-treatment observations. under the strict directions of the homeo-

The tincture, third dilution (Da), is made of thuja are dropped in 100 minims of pathic pharmacy. Two minims of tincture double distilled water and shaken vigorously for about two minutes to make D1. Two minims of D1 are dropped in a second vial of 100 minims of double distilled water and shaken well for a minute or two to make Then finally, two minims of D, are dropped into a third vial of 100 minims of double distilled water and vigorously shaken. This is D_3 , the wart cure. The vials used must be dry, clean, neutral. dose is 33 minims per os-11 minims, morning, noon, and night-daily for three days, after which the warts should be disappearing. Repetition is not often necessary

A significant observation of these authors is that they have not seen any evidence that warts are contagious.

DDT in Milk .- It is acknowledged in the veterinary circle that exposing cows to DDT in any manner is forbidden because, regardless of the portal of entrance, much of the drug (5 to 30%) wends its way into the milk. Says the Prairie Farmer, "Don't feed alfalfa that has been treated with DDT."

Bees and DDT.-The recommendation to avoid the use of DDT on flowering plants and trees in full bloom to protect bees against its toxic action is sound, notwithstanding experiments indicating its apparent tolerance by the honey bee. DDT is an insecticide and bees are insects.

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60 Per Cent Calf Crops Are Not Enough

Sixty weaned calves from a hundred range cows is a pretty low ratio. Yet many authorities agree that this is very close to the national average.

Many good veterinarians working with ranchmen have raised this average markedly. Purina, too, has been working for better calf crops. Experiments with thousands of cattle in Texas, Colorado, and Florida have produced range feeds far better than cake as a supplement for grass. Many ranchers across the country who have used Purina Range Checkers and Purina Range Breeder Checkers report calf crops of 90 per cent or better.



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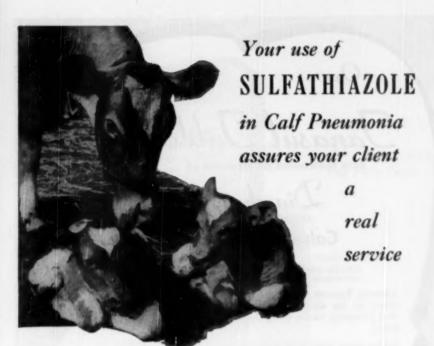
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The daily dose is administered in two or three equal parts. In severe cases, intravenous administration of sulfathiazole sodium is recommended for the first dose.*

Sulfathiazole Merck and Sulfathiazole Sodium Merck are available through your regular veterinary supplier.

Jones, L. M., The chemotherapy of calf pneumonia, Am. J. Vet. Rev. 8:14-28, Jan. 1947.

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